

PURCHASING

July, 1946



ARTHUR G. PEARSON
President, Chicago P.A.A.,
host to the
N.A.P.A. CONVENTION
See Page 87

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A CONOVER-MAST PUBLICATION • 35 CENTS

✓R 1.21 July-Dec. 1946

AVOID COSTLY SHUTDOWNS



USE HYDRAULIC OIL THAT

Prevents Rust and Sludge

DON'T risk expensive stoppages and complicated repairs! Keep your hydraulic mechanisms running smoothly and dependably with *Texaco Regal Oils (R & O)* — developed especially to 1) provide an ideal medium for transmitting power, 2) lubricate internal moving parts, and 3) prevent oxidation and corrosion.

Texaco Regal Oils (R & O) free themselves rapidly of air and water. They prevent oxidation which is the cause of harmful sludge. They prevent rust by "plating" internal metal parts so that water condensations cannot reach them.

Furthermore, *Regal Oils (R & O)* do not foam. They resist the effects of high temperature and

agitation, and keep wear at a minimum.

From the biggest presses to the smallest hydraulically-operated machines, *Texaco Regal Oils (R & O)* have proved their ability to assure smooth, dependable operation. Leading makers of hydraulic units ship their equipment with *Texaco Regal Oils (R & O)* or recommend their use.

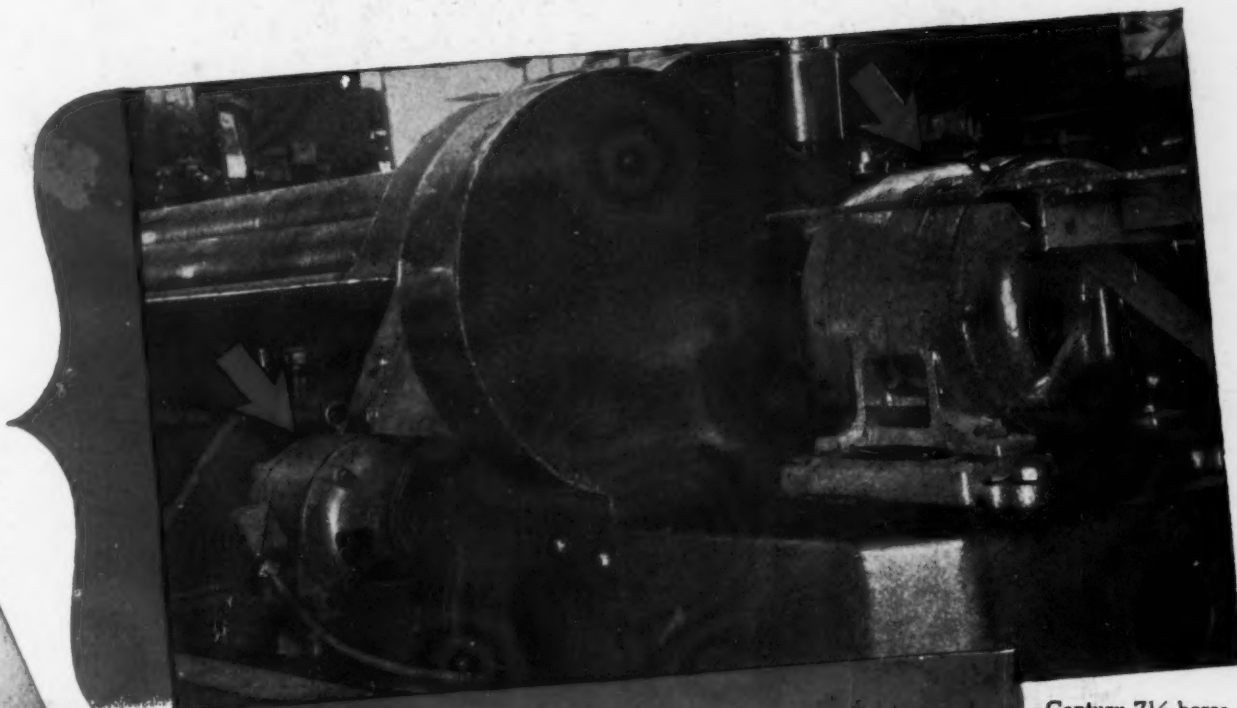
Texaco Regal Oils (R & O) come in sealed drums, in a range to meet every requirement. Use them in your machines to assure trouble-free, economical performance. For full information, call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 E. 42nd St., N. Y. 17, N. Y.



TEXACO Regal Oils (R&O)

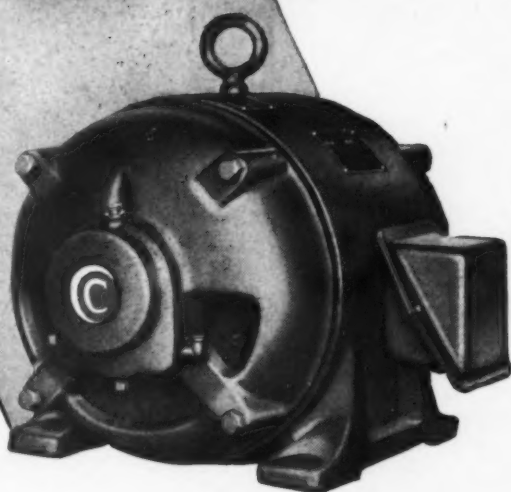
FOR ALL HYDRAULIC UNITS

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON EVERY SUNDAY NIGHT—CBS



Whatever the Torque Requirement . . .
There's a CENTURY MOTOR
 for the Job . . .

Century $7\frac{1}{2}$ horsepower type SCH and 3 horsepower type SC motors driving a steel plate forming machine.



The motor application on the plate forming machine shown above is a good example of Century motors properly applied. There are two separate drives, each having a different power requirement.

The power rolls that force the steel plate through this machine require a motor that starts against a heavy load. A Century type SCH motor with high starting torque and low starting current is used.

The adjustable roll that controls the curvature of the plate requires a standard general purpose Century type SC motor with normal starting torque.

Correct application of these two motors means that the steel plate roller gives top performance and a maximum of output.

If your machines require electric motors from 1/20 to 600 horsepower, investigate Century. Specify Century motors on all your electrically powered equipment. Engineered to the functional characteristics of the machines they drive to assure top performance — Century motors are a vital factor in producing a better product at a lower cost.



476

CENTURY ELECTRIC COMPANY • 1806 Pine Street • St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

Get ALL the advantages of magnetic holding

Use Brown & Sharpe Permanent Magnet Chucks

COST NOTHING TO OPERATE ... EVEN TO INSTALL

- ★ No electricity, wires, electrical connections, generators or brushes.
- ★ Nothing to maintain. Special alloy magnets retain energy indefinitely.

SIMPLE MECHANICAL CONTROLS

- ★ Hand-operated. Easy 180° movement from ON to OFF position.
- ★ POSITIVE HOLDING
- ★ INSTANT RELEASE
- ★ plus wide variations of holding force for easy positioning of work.

SAFE FOR WORKMAN AND WORK

- ★ No danger of work flying off due to power interruption.
- ★ Work can be left on chuck indefinitely without danger of heating either chuck or work.

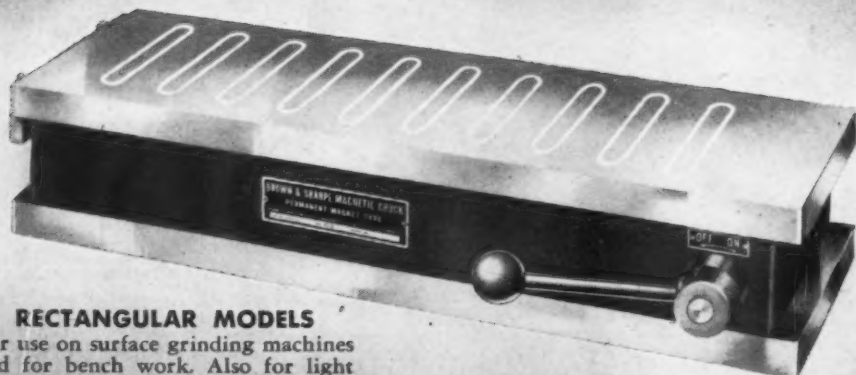
MORE USEFUL IN MORE PLACES

- ★ Portable ... for use on various machines, also for testing, inspection and laying out work.
- ★ Wet or dry grinding.
- ★ Large, heavy work or groups of small parts.

★ These chucks are for sale only in the United States of America and its Territories.



ROTARY MODEL
for grinding operations and light cuts on lathes.



RECTANGULAR MODELS
For use on surface grinding machines and for bench work. Also for light cuts on planers, shapers and milling machines.

ALSO permanent magnet V blocks and dial test indicators with magnetic bases.

WRITE FOR CATALOG describing operating principles.

BROWN & SHARPE MFG. CO., Providence 1, R. I.

BROWN & SHARPE

all agree...



PLANT
MANAGER



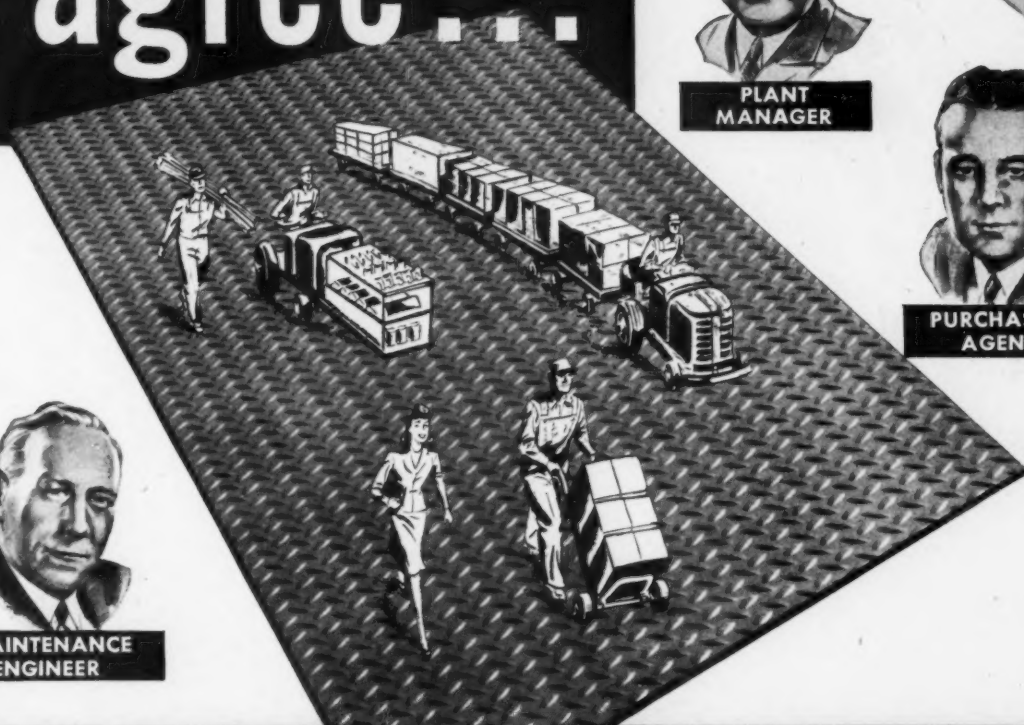
PURCHASING
AGENT



SAFETY
ENGINEER



MAINTENANCE
ENGINEER



Inland 4-Way Floor Plate

Is Safe—Economical—Easy to Install

PLANT MANAGERS interested in efficient operation and better production appreciate the confidence gained by employees standing or walking on Inland 4-Way Floor Plate. Its safety and fireproof qualities mean less liability while lower original installation and maintenance costs bring added economy.

SAFETY ENGINEERS can breathe a sigh of relief when slippery, dangerous floors are covered with Inland 4-Way Floor Plate. They know that, installed on floors, ramps, walkways, steps, platforms or any place where slips or falls may occur, it provides a safe surface that prevents slipping and falling.

MAINTENANCE ENGINEERS like the way Inland Floor Plate can be installed over all types of worn floors or placed over wooden or steel joists without additional support on original jobs. It's the most rugged flooring they can install . . . stands up for years and years under the toughest and heaviest traffic. In addition it sweeps and mops easily, drains freely and can be quickly painted for a truly attractive flooring.

PURCHASING AGENTS find their job is made easier when requisitions specify Inland 4-Way Floor Plate. Number one: because it is promptly available from conveniently located warehouse distributors in $\frac{3}{4}$ " to 16 gauge thicknesses, and Number two: because Inland safety flooring does a better job and everyone from plant manager on down gets the results that he expects.



Write for your copy of the Inland 4-Way Floor Plate Catalog — samples are available upon request.

Inland Steel Co., 38 So. Dearborn Street, Chicago 3, Ill.

Sales Offices: Cincinnati, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

Inland Steel Company

Principal Products: Bars • Structurals • Plates • Sheets • Strip • Tin Plate • Floor Plate • Piling • Reinforcing Bars • Rails • Track Accessories

Gaylord Boxes

ADVANCED

- In DESIGN,

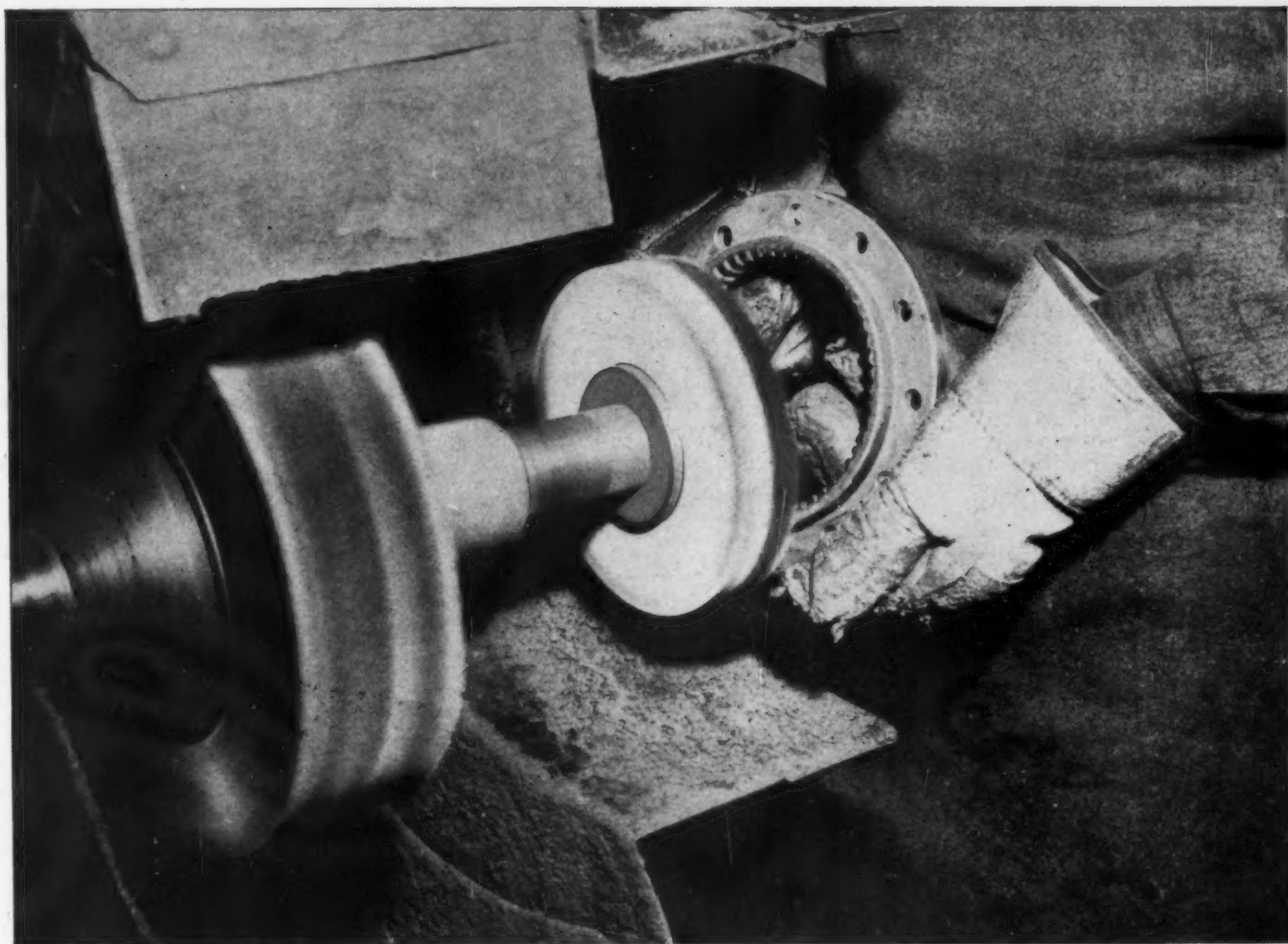
MATERIALS

and CONSTRUCTION

CORRUGATED AND SOLID FIBRE BOXES
FOLDING CARTONS
KRAFT GROCERY BAGS AND SACKS
KRAFT PAPER AND SPECIALTIES

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Worth • Detroit • Cincinnati • Des Moines • Oklahoma City • Greenville • Portland • St. Louis
San Antonio • Memphis • Kansas City • Bogalusa • Milwaukee • Chattanooga • Weslaco • New Haven
Appleton • Hickory • Greensboro



GEAR UP AND GO!

The necessity for finishing surfaces to micro tolerances to gain *absolute maximum efficiency* was brought to the fore during the war. Power brushes, as developed by Osborn, were chosen to do that job.

Many manufacturers today have added this war-discovered technique to the improvement of their products.

This applies to gears and all interior and exterior surfaces of precision parts—for deburring and all surface finishing operations.

It reduces stress concentration areas and thereby eliminates metal fatigue, thus increasing the strength

of the metal and prolonging the life of the part or product.

Power brushing techniques as developed by Osborn can help make your product (whatever it is!) look better, perform better and sell better! And **LOWER** your unit cost!

Investigate without obligation. Contact Osborn and an expert field engineer will be detailed to make a study of your operation or plans, and submit specific, detailed recommendations.

THE OSBORN MANUFACTURING COMPANY

5401 Hamilton Avenue

Cleveland, Ohio



WORLD'S LARGEST MANUFACTURER

OF BRUSHES FOR INDUSTRY



PROOF That It Pays to give Cutting the Once-over

This spectacular increase in cutting speed, (2500%) is exceptional, of course. But it does show how a new approach to a problem can result in improved methods, using improved tools . . . to bring about sensational reductions in production costs. It is positive proof that it pays to investigate modern tools like Atkins "Curled-Chip" Saws...to get the full story of these fine saws... their greater cutting speed, greater cutting accuracy, longer cutting life.

Check with your distributor today. Ask him to have an Atkins Cutting Engineer arrange an actual demonstration on work you choose.

See Your Industrial Supply Distributor

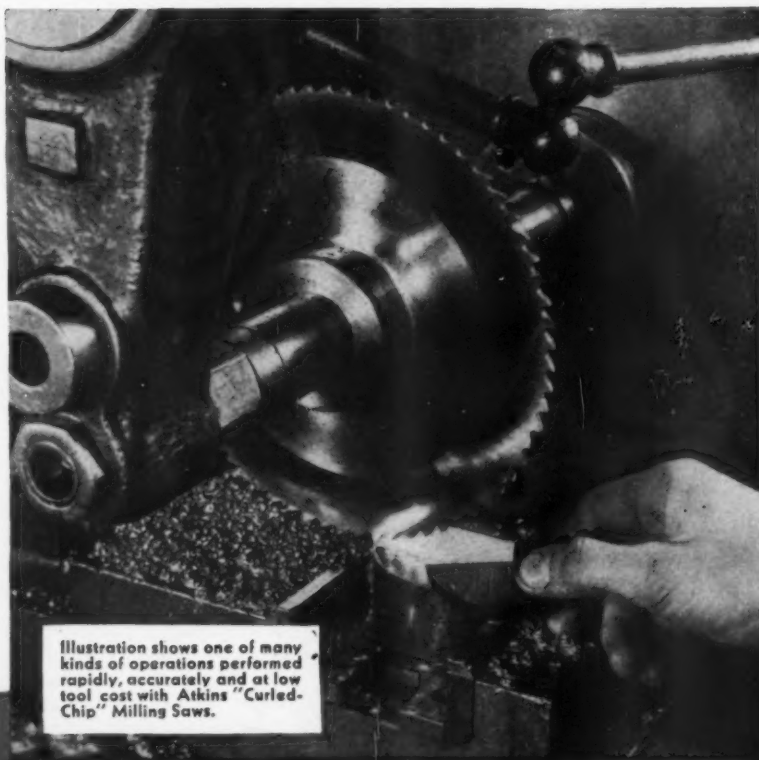


Illustration shows one of many kinds of operations performed rapidly, accurately and at low tool cost with Atkins "Curled-Chip" Milling Saws.

E. C. ATKINS AND COMPANY
 Home Office and Factory: 402 S. Illinois St.
 Indianapolis 5, Indiana
 Branch Factory: Portland, Oregon
 Branch Offices: Atlanta Chicago Memphis
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MAKERS OF BETTER SAWS FOR EVERY CUTTING JOB

Power and Hand Blades • Milling Saws • Segmental Cold Saws • Metal Cutting Bands



Heavy-duty ICC
Drums and
Bilged Barrels



Light-gage
Drums, 55, 30,
and 15 gal. ca-
pacity and 100 lb.
Grease Drums



Lightweight Drums
for Chemical
and Powdered
Materials



Painted Various
Colors or
Decorated

For the economy of hundreds of round trips
USE J&L "BAYONNE" BILGED BARRELS

The heavy duty, hot-dip galvanized "Bayonne" bilged barrel is built by experienced J&L Steel Barrel men to make hundreds of round trips with safety. If your operation is suited to a returnable container try J&L "Bayonne" bilged barrels. Many of them have been in use as long as twenty years. Write the nearest plant for information.

J & L STEEL BARREL COMPANY

A SUBSIDIARY OF JONES & LAUGHLIN STEEL CORPORATION

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NORTH KANSAS CITY, MO. • PORT ARTHUR, TEXAS



**J&L
STEEL**



PREVENT "ROAD ROAR"

WITCO

SOUND DEADENERS

eliminate VIBRATION NOISE

These bituminous base mastics have been specially developed to reduce vibration and prevent corrosion. Applied with standard spray equipment, a lightweight coating ($\frac{1}{2}$ pound per square foot) is recommended for doors, panels, fenders, hoods, decks, lids, tops, floors—wherever rust, abrasion, or vibration are problems.

Witco Mastics meet the highest automotive specifications for nonflammability, adhesion, slumping and resistance to abrasion, sunlight and salt spray. They air-dry quickly, and withstand baking temperatures without deterioration.

Witco Mastics are available in several grades for various applications. Technical data and samples will be sent on request.

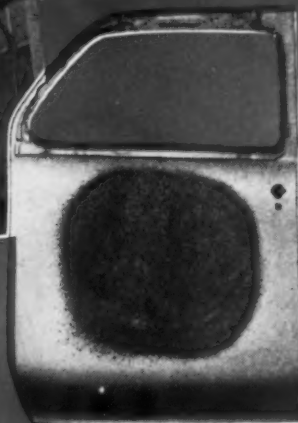
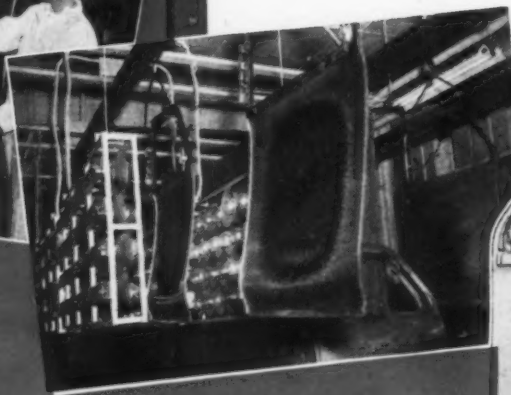


WITCO CHEMICAL COMPANY

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CHICAGO 11, ILL.

ESTABLISHED
1920

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NATIONAL-STANDARD COMPANY NILES, MICHIGAN

Wire Braids flat and tubular in Steel or other metal. Tapes and Specialized Wire Products for Tire Beads, Steam Hose Armor, Reinforcement for Oil Well Drilling Hose, Braided Covering for Flexible Tubing, Aircraft and Tank Radio Shielding. Stranded Wire for reinforcing Flat and V Belts. Braided Covering for Electrical Cables. Drawn wire in small sizes down to .002, of Steel, Aluminum, Brass, Monel, Nickel Silver, Stainless Steel, Phosphor Bronze and other Alloys.



WORCESTER WIRE WORKS, DIVISION WORCESTER, MASS.

High quality Wire in small diameter sizes, down to .006. Round, Low and High Carbon Steel. Annealed, Hard Drawn, Tempered, Bright, Liquor Finish, Tinned, Copper Coated, Cadmium Coated, Galvanized.



THE ATHENIA STEEL COMPANY, DIVISION CLIFTON, NEW JERSEY

Cold Rolled, High Carbon Flat Steels in widths of 1/8" to 6 1/2", Thickness .0015 to .062 Custom-made Steels—.60 Carbon and higher. Entire range of Annealed, Hard Rolled, Black Tempered, Tempered and Polished or Tempered and Polished with Blue or Straw Colored finish, Best quality Small Flat Springs.



WAGNER LITHO MACHINERY CO., DIVISION HOBOKEN, NEW JERSEY

Complete lines of automatic equipment—designed, manufactured and installed for can companies and others using sheets in the metal decorating trade. Individual units consist of Roller Coating Machines, Conveyor Type Ovens and Auxiliary Equipment for tandem operation with lithographing presses, etc.

What Makes These Four Divisions Alike?

Is it merely that they are grouped together under National-Standard's leadership?

No, their kindredness is much more basic.

Each of the four divisions of National-Standard has the unusual faculty for putting itself in its customer's shoes.

Each division likes to tackle tough assignments . . . has long experience in analyzing problems peculiar to many different industries. And, even after a better steel, wire, or

any one of the other products listed is developed, work does not stop . . . ways and means of improving a product, its method of use or application are still studied.

Securing better results for the customers of each National-Standard Division is what really makes them alike.

These unique services have won a host of friends . . . we would like to add your Company to this growing list of satisfied customers.



DO YOU need parts like these **NOW?**

if it's rubber...

it's **H.O.**
Canfield

Now—extruded or die-cut rubber parts like these. Now—cut washers, gaskets, tubing (all sizes—any length), protective edging, stripping, and channels. Now—to your precise specifications. Now!

If you need any rubber part—molded, die-cut, or extruded—big or small, simple or intricate, made to your specifications or from stock molds, write or wire The H. O. Canfield Company NOW.



FREE—New H. O. Canfield General Catalog illustrates thousands of rubber and synthetic rubber parts manufactured for the aviation, automotive, electrical, medical, plumbing, and general industry. Send for your copy to-day.

THE **H.O.**
Canfield CO.

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Connecticut



Keep Eyes Safe From All

3



The application of the Bausch & Lomb Industrial Vision Service in your plant means: fewer accidents . . . increased production . . . improved quality . . . reduced labor turnover . . . lower training costs. Write for this booklet.

Bausch & Lomb Welding Glass provides complete protection from all 3 of the eye hazards encountered in electric and acetylene welding . . . blinding glare, and the invisible but harmful infra-red, and ultra-violet radiations.

In a complete range of densities, with transmission characteristics conforming to Federal Standard Color Specifications, Bausch & Lomb Welding Glass may be obtained in lenses for B&L Welding Goggles or in welding plates for use in helmets or hand shields. Write for complete details. Bausch & Lomb Optical Co., 741-7 St. Paul Street, Rochester 2, N. Y.

BAUSCH & LOMB

Safety Eyewear



FREE

"Know-How" Information

USE PREPAID POST CARD — PAGES 19 & 20

☐ **1. SPECIALTY STEEL STOCK LIST**—Handbook lists full range of specialty steels available from the warehouses and distributing channels of the Crucible Steel Co. It also contains helpful references on selection, use and engineering data. Buyers will find this a handy booklet.

☐ **2. EXPANSION BORING TOOLS**—Loose leaf catalog describes the Davis block type boring tool equipment; micrometer "L" type tools for rigid boring; recessing or grooving tools for inside grooving, recessing or chamfering; fly cutter tools; super micrometer tools for extreme accuracy in single cutter boring, and gives engineering data and Order Information wanted. Davis Boring Tool Divn., Giddings & Lewis Machine Tool Co.

☐ **3. PLASTIC ARMOR**—Kimpreg plastic surfacing is termed "the new plastic armor for plywood." It is a durable, lightweight, strong, hard-surfaced sheet metal that is water-resistant, weatherproof, stainproof, and unaffected by weak inorganic or organic acids, alkalis or common solvents. Uses are legion from cabinet material to flooring, concrete forms or bar and table tops. Kimberly-Clark Corp., Plastics Divn.

☐ **4. TUBULAR FURNITURE**—Fully illustrated catalog covers the Doehler company's line of tubular furniture including chrome plated furniture and equipment, aluminum furniture, both equipment, costumes, etc. Much of the equipment is ideal for business offices, reception rooms, showrooms, etc. There is also color card of DuPont Fabrikoid. Doehler Metal Furniture Co., Inc.

☐ **5. PYROMETER SUPPLIES**—"Buyers' Guide", 40 pages, which makes it easy to select and order pyrometer supplies has just been released by Brown Instrument Company. It gives instructions on "How to Order" and "Ordering Examples". Its number is 100-1 and it lists thermocouples, protecting tubes, thermocouple wire, lead-wire, insulators, etc. for all applications in all industries. Philadelphia 44, Penna.

☐ **6. FIBROUS & PLASTIC Parts**—Circular outlines the services of the Rogers Corporation—engineering and design, die making, punching, drawing, stamping, finishing and assembly, in fibrous and plastic materials.

☐ **7. MACHINING PHENOLIC Plastics**—"Machining Data on Phenolic Plastics" is the title of booklet available from Durez Plastics & Chemicals, Inc., which discusses

such factors as tumbling, polishing, buffing, filing, sanding, grinding, milling, drilling, tapping, molding-in engraving, machine engraving, etc.

☐ **8. CASTINGS**—Bronze, Aluminum, Brass Castings are the subject of booklet available from Central Pattern & Foundry Co. Mechanical properties of aluminum casting alloys, castings specifications, U. S. Air Corps bronze castings specifications, Navy brass and bronze castings specifications, and Federal standard specifications for brass and bronze are listed.

☐ **9. MUSIC For Industrials**—This booklet is different from any we have previously listed. It tells about music specially made and programmed for industry, offices, etc., by Muzak, and the value of properly programmed music in plants, from the standpoint of combatting fatigue, stimulating workers, and being an effective morale builder.

☐ **10. GASKETING-SEALING Materials**—Free 50-sample portfolio of gasketing and sealing materials, filing size 8½" x 11", is yours for the asking. Sound and vibration dampening materials are included. Felt Products Mfg. Co.

☐ **11. "DRIVES FOR INDUSTRY"**—That is the title of Bulletin No. 80, 16 pages, issued by W. A. Jones Foundry & Machine Co., which gives broad picture of Jones worm, spur, gear-speed reducers, pulleys, V-belt Sheaves, pillow blocks, clutches, etc., etc., and engineering services.

☐ **12. G-E MYCALEX**—New 24-page booklet describes G-E Mycalex, stone-like product composed of mica and a special glass; lists the properties, available types, molded parts, fabricated parts, machining practice and how and where to order the material. Important feature is properties chart of six grades of mycalex of both the compression and injection molded types. Electrical and physical properties are described. Chemical Dep't. General Electric Co.

☐ **13. ADHESIVES**—Paisley Products Inc. has prepared eight-page folder to help industrial buyers and users of adhesives to gain greater knowledge of adhesives. Title of the folder is "The Sure, The Modern Way to Buy Adhesives."

☐ **14. MATERIAL HANDLING TIPS**—Purpose of Barrett Junior Catalog is to show

how to reduce material handling costs, and the advantages offered by Barrett lift-trucks and portable elevators. Reduced labor costs and increased storage space values are outlined. Barrett-Cravens Co.

☐ **15. WIRE ROPE**—Macwhyte Wire Rope Catalog G-15, 170 pages, lists the company's full line, which includes PREformed and Non-PREformed ropes, internally lubricated, elevator rope, wire rope slings, aircraft cables, assemblies and tie rods, stainless steel wire rope, monel metal wire rope, galvanized wire rope, etc., etc.

☐ **16. SILENT CHAIN DRIVES**—Data Book 125 describes the engineering and physical qualities of Link-Belt Silverstreak silent chain drives, whose first cost per year of service is said to be "always lowest." Some of these drives have been in service more than 30 years. Link-Belt Co.

☐ **17. TAPS**—Handbook of Helpful Facts for Tap Users, issued by Chas. H. Besly & Co., is now in its second edition. It gives up-to-date information on taps and tapping procedures; drill sizes and tapped hole sizes and other data being itemized in detail.

☐ **18. DECALCOMANIAS**—Brochure reproducing 94 colorful decal signs should be of interest to you as a buyer, and also to your advertising and sales promotion departments. It is termed the Meyerco Decalcomania Sign Ad-Visor, a guide to point-of-sale promotion. It shows when, where and how to use decal store signs. Meyerco Co.

☐ **19. GRANNY GRIP**—What is it? It is a cam lever mechanism and chain that grabs up heavy steel barrels, steel plate, etc., and holds same in a vice-like grip that grows tighter the heavier the load. It is described in 4-page catalog just released by the Boyer-Campbell Co.

☐ **20. LIGHTING EQUIPMENT**—Wakefield Catalog No. 46 is new, 40 pages. Its title is "Over-All Lighting", and it presents details of lighting equipment for offices, drafting rooms, schools, stores, etc. It gives construction details and full dimensional data. F. W. Wakefield Brass Co.

☐ **21. HEAVY DUTY WEIGHING**—Illustrated circular describes platform type Detecto-Grams scales, equipped with Over-and-Under head attachment with 200 pound capacity. Detecto Scales, Inc.

☐ **22. MACHINING AMPCO METAL**—Bulletin 66 describes the machining of this aluminum bronze alloy, which is furnished in 6 basic grades with a range of hardness. Information is based on standard machining practice in the Ampco Machine shop during the war. Ampco Metal, Inc.

(Continued on page 16)

PURCHASING AGENTS—ASSISTANTS—BUYERS

Send for this free, up-to-date literature

FOUR "KNOW HOW" PAGES—14-16-19-20

Use convenient prepaid postcards on pages 19 & 20



NEW FILING SPEEDS for today's production schedules

THE increased use of light-but-strong manufacturing materials—such as aluminum, magnesium, plastics and the softer alloys—means greater demands for “shearing” type files.

These files reach their highest perfection in the newly designed Nicholson Super-Shear (exclusive with Nicholson) and the improved Nicholson Superior Curved Tooth. Both combine the very desirable production-speeding qualities of *fast-cutting* and *smooth finishing*.

Nicholson Super-Shear (right) — Its extremely sharp teeth are milled in an “off center” arc that varies angles and spacing of teeth to provide both fast cutting and smooth finishing when file is used with overlapping right-toward-left stroke. Longitudinal serrations help break up chips.

Nicholson Superior Curved Tooth (inset) — Conventional design with extra sharp milled teeth and long-lasting quality. Rigid type (with tang), and Flexible for use in special holder (see inset) on convex and concave surfaces. Also made in Narrow Flexible and Rigid Half Round Shell shapes.

Place your orders with your mill-supply house NOW



NICHOLSON FILE CO. • 28 ACORN ST., PROVIDENCE 1, RHODE ISLAND
(In Canada, Port Hope, Ont.)



NICHOLSON FILES FOR EVERY PURPOSE

□ **23. SHAKING OUT FLASKS**—Bulletin 124 F describes the Robins portable Floatex Shakeout with automatic flask loader, a unit which lifts flasks off the foundry floor, deposits them on receiving table, turns them upside down, shakes out the sand and discharges the castings—all in one quick series of operations—making for time and labor savings. Flasks weighing up to 250 lbs., can be handled with ease. Robins Conveyors, Inc.

□ **24 HACK AND BAND SAWS**—Handbook on hack saws and band saws, 48 pages, is available from the Capewell Mfg. Co. It contains speed and feed charts, data on trouble shooting, detailed specification charts, gives data on length of band blades used on various machines, metal cutting data, and other information of value to buyer and user.

□ **25. TWEEZER SPOT WELDING**—Bulletin describes Besco Tweezer Spot Welding Machine. It is a portable unit, weighs 25 lbs., and can be used for uniting small parts from .0005" through .015". With auxiliary booster unit it will handle elements up to 1/8" round. Maker says tweezers do not heat up. The tweezers probe, hold, bend and weld. "Welds like Magic at 1/1000 of a second." Tweezer-Weld Corp.

□ **26. REBUILT MACHINE TOOLS**—Circular released by Botwinik Bros., Inc., illustrates a dozen machine tools—screw machines, grinders, millers, etc., and lists 66 additional selections including presses, planers, lathes, etc., available for immediate delivery.

□ **27. CONTROL WAVES**—Bulletin 107 just released by C. B. Hunt & Son, Inc., is designed for the man who buys or specifies control valves. It consists of 12 pages packed with factual data that can be used almost daily in writing up an order or specification on machinery and production equipment—control valves, air valves, hydraulic valves, descaling valves, swing, rotating and ball bearing joints, couplings, etc.

□ **28. SHORT LENGTH Screw Machine Drills**—Illustrated circular describing short length screw machine drills, available in fractional sizes 1/16" to 2", in wire gauge sizes #1 to 60, letter sizes A to Z in both right and left hand cut, is available from Whitman & Barnes. Drills are properly proportioned as to lengths, web thickness and flute contour.

□ **29. FLAME HARDENING**—Catalog No. 90 describes design and use of Airco flame hardening apparatus. Items vary from simple water-cooled torches and tips from hardening small parts to complete apparatus for use on large jobs, equipment

for gear hardening, and hardening of both internal and external rounds, as well as flat surface hardening. Air Reduction Sales Co.

□ **30. ALUMINUM ALLOYS**—Ternalloy aluminum alloys, a series of aluminum-magnesium-zinc alloys possessing exceptionally high elastic properties are described in bulletin just released by the National Smelting Co. Advantages claimed are: exceptionally high strength without recourse to heat treatment, dimensional stability, excellent machinability, good polishing characteristics, and good corrosion resistance.

□ **31. OFFICE LIGHTING**—"Remodeling with Light to Streamline Office Space" is title of new booklet, Y-552, issued by G. E. Lamp Department. Large illustrations, diagrams and short copy are used to present ideas on streamlined lighting for the executive office, general office, conference room.

□ **32 RELAYS, TIMING DEVICES**—New catalog issued by Potter & Bromfield Sales Co. gives complete information on the company's line of standard relays and electrical timing devices. 24 pages; well illustrated. Company states catalog marks a real step toward establishing more accurate ratings for the current carrying capacity of relay contacts, and ratings shown are believed to more nearly express the true maximum current carrying capacity.

□ **33. TABLE, COUNTER TOPS**—Eighteen different patterns of decorative surfacing materials of G. E. Textolite for table and counter tops are shown in new color folder issued by the Plastics Divisions of the General Electric Co. Listed also are the advantages, recommended uses, properties, grades, and sizes of the material.

□ **34. CARBIDE STEEL MILLING Machine**—Catalog CSM 20 describes carbide steel milling machines announced by Kearney & Trecker. The CSM (carbide steel milling) machines offer precision and rigidity and the necessary horsepower for the most efficient application of carbide milling cutters. Machine is available in both horizontal and vertical models in 20, 30 and 50 hp sizes.

□ **35. RETAINING RINGS**—"Truarc" retaining rings are covered in detail in 48 page catalog just released by Waldes Kohinoor, Inc., covering varied applications of 7 basic retaining ring types. Reference table gives the correct size and number for every type of commonly used ball bearing. Special pliers fitting ring apertures to speed assembly are also shown.

□ **36 CHLORINATION**—Pennsylvania Salt Mfg. Co. has issued 50-page book of instructions in the uses of Perchloron in swimming pool sanitation, water purification,

sewage disposal, and as a bactericide in the food industry. Perchloron is 70% available chlorine.

□ **37. DUAL PURPOSE**—You may have use for this dual purpose gage which is available from the Federated Metals Division of the American Smelting & Refining Co. It is of the slide-type. Gage on one side is a Wire Gauge Comparer, comparing gage number with B&S or Stub's or Birmingham diameters. The other side is a melting point indicator for tin-lead solder of varying tin and lead contents respectively.

□ **38. PUMPS**—Catalog E-G845 issued by Economy Pumps, Inc., covers the company's axial flow pumps for capacities up to 100,000 GPM and heads to 50 ft. Propeller and mixed flow impellers are offered in all capacities. Horizontal and vertical axial flow.

□ **39. HIGH HEAT Resistant Coatings**—Thur-Ma-Lox is name of heat resistant coatings for protecting metal surfaces in power and process equipment against "temperature damage from sub-zero to red-hot". They are produced in black and aluminum. No. 7 is impervious to weather and industrial atmosphere. No. 10 is recommended for sheltered locations. Both are effective up to temperature limit of organic materials. Bulletin describes them in detail. The Dampney Co. of America.

□ **40. STUB SCREW Machine Drills**—Circular describes stub screw machine drills announced by Chicago-Latrobe Twist Drill Works. Wire gauge No. 1 to 60, letter sizes A to Z, and fractional sizes from 1/16" to 2". Available in either right or left hand construction.

□ **41. SPEED DRILLING**—"Hyper-Drilling" is described in Bulletin J-2 issued by Republic Drill & Tool Co., as a means of achieving "Speed and precision in mass production drilling". On laboratory test, 3/8" hole, 4" deep was drilled in 5 seconds with new "Jet" drill and "Jet" director.

□ **42. BELTING CATALOG**—New belting catalog has been issued by Hewitt Rubber Division of Hewitt-Robins, Inc. Information covers the company's line of conveyor, transmission and elevator belting. Many uses are illustrated by plant photographs. It is written in simple, non-technical terms.

□ **43. KOROSEAL**—18-page booklet published by B. F. Goodrich Co. describes "Koroseal The Modern Flexible Material for Industry", outlines its resistance to corrosives, oils and solvents, flame, water, moisture, heat and aging, sunlight and oxidation. Mechanical properties are discussed, including adhesion to other materials, flexing, machining qualities, abrasion resistance, impact strength, tensile strength, etc. Various forms in which it is available including sheets, molded articles, tape, gels, extruded forms and coated goods are given. Industrial applications are described.

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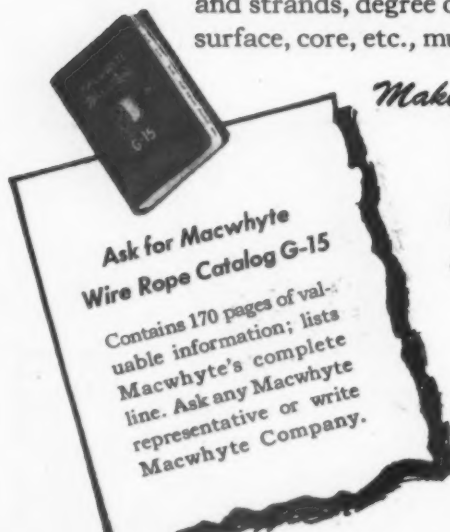


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Steel Wire Rope, Monel Metal Wire Rope,
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NO. 608

(Continued from page 16)

44. ROLLING DOORS — New Kinnear catalog, AIA File 16-D-13, describes steel rolling service doors, fire doors and window shutters, sectional overhead doors, bifolding doors, rolling metal grilles, and special type doors for equipment and buildings from trucks to kitchenettes. Kinnear Mfg. Co.

45. KAPRAY — Kapray is styled an odorless renovator. It is said to instantly remove odors of putrefaction, destroying it at its source. It also helps to prevent putrefaction. Keeps bowls and urinals free from odors if used once a day. It contains no acid. It contains mercury ricinoleate and potassium permanganate. Economical — one tablespoonful to 3 gallons of water. Industrial Sanitation Co.

46. ONE-MAN CRANE — Catalog 73 describes the One-Man Aero crane made by Orton Crane and Shovel Co. Cranes are pneumatic tired and engineered for plant-yard uses; travel from job to job under their own power. Seven models are described; operating radius 9 to 50 feet. Table lists the weights of rehandling and excavating clamshell buckets loaded with various kinds of loose materials.

47. PLASTICS — "Testing Plastics Parts" is the title of Chapter No. 4, SPI Handbook, issued by The Society of the Plastics Industry, Inc. It is designed primarily as a guide to industry in setting up its own performance tests on plastic parts. It should be a part of your library on plastics.

48. WORKHOLDER — Powrarm is the name of hydraulic work holder and positioner with "fingertip control", announced by The Garfield Engineering Corp. It enables the mechanic to work with both hands. Can be used in welding, grinding, boring, assembling, holding jigs, servicing, repair jobs, tool making, pattern making, etc. Exerts pressure up to 6000 lbs. per square inch. Holds up to 150 lbs. and gives easy access to all sides of job.

49. PLASTICS — "Celanese Synthetics for the Electrical Industry" — plastics, textiles, chemicals — is name of new booklet by Celanese Corp. of America. Shows uses for Lumarith films and foils, sheets, molding materials, Celanese yarns and fabrics, Fortisan high strength cellulosic yarn, and Celanese chemicals.

50. ALUMINUM CASTINGS — Double AA brand aluminum castings are illustrated and discussed in booklet issued by Aluminum Alloys Corp. Data section contains specifications, and physical and chemical properties of alloys for sand castings and permanent mold castings.

51. CAR BOTTOM FURNACES — Bulletin describes Rockwell car bottom furnaces (gas, oil, electric) for stress relieving, annealing, drawing, heating large and irregularly shaped pressure vessels, forgings, etc., annealing or aging iron steel, stainless steel or non-ferrous alloy castings, and firing ceramic products. It includes a car with a refractory top which forms hearth of heating chamber, top alone being exposed to the heat. Lower part is car proper for movement on steel rails. W. S. Rockwell Co.

52. CHUCKING MACHINE — Bulletin SC-46 describes the Acme-Gridley 12" Chuck-Matic single spindle chucking machine for heavy duty, high production, metal-turning operations on castings, forgings, and tubing parts up to 12" diameter. Machine is said to be highly efficient for straight, internal or taper boring, form turning, form boring, external turning, forming, facing and chamfering. The National Acme Co.

53. FANS FOR Forty-Six — "Emerson-Electric Fans for 1946" is new catalog in color giving details of the complete line of Emerson-electric fans for the post war season. 28 pages. It illustrates and gives design and construction specifications with complete performance data on the various types of desk fans, air circulators, ceiling fans, exhaust and cooler fans, etc. Emerson Electric Mfg. Co.

54. PNEUMATIC TOOLS — New catalog No. 12 on pneumatic tools is announced by the Keller Tool Co. Buyers will appreciate clear text and abundance of illustrations of the air tools and their on-the-job applications. Fourteen new tools developed during the war bring this book up-to-date on the Keller line. Among these are air powered sawing and filing tool, impact wrench, and light weight Keller air hoist in 300 lbs., 1/4 ton and 1/2 ton capacities.

55. LINEAR DIVIDING MACHINE — Bulletin 153-64 describes Gaertner automatic linear dividing machines, for rapid automatic ruling of linear scales in either

the inch or metric system. Largest model will rule continuous scale up to 40 inches long at a rate of 60 or more lines per minute with rated accuracy of plus or minus 0.0001 inch. The Gaertner Scientific Corp.

56. REFRACTORY CONCRETE — "Lumnite for Refractory Concrete" has just been published by The Atlas Lumnite Cement Co. This 24-page booklet contains basic information on materials and methods used in making refractory concrete for different temperature and insulating requirements. Section is devoted to heat-resistant concrete for foundations, floors and structures subject to soaking heat.

57. EMERGENCY JACK — Circular describes Simplex 310-A Emergency Jack, 15-ton capacity, 14" lift. Maker states it is ideal for lifting and lowering, pushing and pulling. Complete equipment includes lever bar, auxiliary cap shoe, and 5 ft. of 1/2" BBB chain. Templeton, Kenly & Co.

58. LEAD COMPARATORS — Bulletin 1200-46 published by Michigan Tool Co. describes its new models 1200 and 1200A "Sine-Line" lead comparators for checking helices on internal and external helical gears and worms in production. Both will handle work with a maximum swing of 10 in. and may be used as an aid in setting up gear cutting and finishing machines, checking gears after processing, etc.

59. DESTROYS WEEDS — Catalog 2028 describes Hauck flame-guns for destroying weeds. There are portable hand models, glider models, and larger models on wheels. Hauck Mfg. Co.

60. RUBBER MOLDING — Bulletin 4601 describes the HPM Turbojector for injection molding of rubber. Machine is designed for molding both natural and synthetic rubber. Injection capacities as high as 8 lbs. per cycle have been secured. Mold is filled automatically. Due to elimination of flash, finishing operations are reduced to very minimum. Hydraulic Press Manufacturing Co.

61. MILLING MACHINES — Cincinnati plain and duplex hydromatic milling machines are described in Bulletin M-1372. 12 sizes available, ranging from 24" to 90" table travels, powered by 7 1/2 to 30 hp motors. Cincinnati Milling Machine Co.

(Continued on page 20)

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7/48

(Continued from page 19)

62. VALVES—Booklet "Edwards Comes to Call" makes it possible for steel valve engineers and buyers "to make a trip to the plant of Edwards Valves, Inc., without leaving their desks. Each of the principal operations in the Edwards plant is illustrated and described in sequence. Book is plastic bound with laminated cover. Edwards Valves, Inc.

63. ELECTRICAL INSTRUMENTS—Am-meters, voltmeters and wattmeters are listed in booklet issued by the Norton Electrical Instrument Co., entitled "Electrical Instruments Switchboard and Portable."

64. BRIGHT COPPER COATINGS — Technical Service Data Sheet No. 13-9-2-2 describes Cuprodine process for producing adherent, bright copper coatings on steel surfaces by simple immersion, without the use of electric current. American Chemical Paint Co.

65. HIGH TENSILE STEEL — Otiscoloy is the name of J&L high tensile steel developed to meet need for readily weldable and easily fabricated, corrosion resistant steel of substantially greater strength than the standard carbon structural steels. It is described in detail in new 16-page Otiscoloy booklet. Jones & Laughlin Steel Corp.

66. FLEXIBLE SHAFT GRINDER — Bulletin issued by the Spring Specialty Co. describes Leigh VB2 high speed, direct connected flexible shaft grinder. It operates at free speed of 18,000 rpm. Spindle has integral, key operated 1/4" collet, and can be provided with auxiliary insert reducing collets. Motor is 1/4 hp a-c d-c type.

67. DRILLING ATTACHMENTS — Catalog No. 45 issued by Geo. A. Terry Co. describes angle and flexible drilling attachments for use with portable electric and pneumatic tools.

68. X-RAY FOR FOUNDRY CONTROL —New 4-page booklet (R1023) titled "X-ray as a Foundry Control Tool" is announced by North American Phillips Co. It tells how X-rays are produced, and about costs, fluoroscopy, etc.

69. WELDING CHART — Bulletin CC-2 issued by the American Manganese Steel Divn. of American Brake Shoe Co. is a "Comparison Chart of Nickel-Manganese

Steel and Hard-Surfacing Welding Rods and Electrodes." It lists 14 Amsco welding rods and their applications, showing which Amsco rod to use for each application, and also identifies comparable rods of other makes. The chart is free.

70. "ENGINEERED HEAT" — Such is the title of booklet issued by Salem Engineering Co. which contains descriptive information on circular soaking pits, various types of heating furnaces, and auxiliary equipment developed by Salem.

71. CANVAS GOODS — Catalog No. 146 describes Bemis Dri-Tite tents, tarpaulins, camping equipment and miscellaneous canvas goods. White untreated paulins are also listed. Bemis Bro. Bag Co.

72. MATERIAL HANDLING — Trolley wheels, plain or flange, single or double ball race; I-beam trolleys, and idler rollers are described in catalog just issued by Gray Hub Co.

73. CLAMPS — Toggle action clamps, pliers and wrenches are covered in bulletin issued by Knu-Vise Inc. Various types are illustrated by line drawings showing operation, accompanied by text explaining uses. The vise wrench can be used as pipe wrench, for pulling cotter pins, as portable vise, work holder, etc.

74. METAL CUT-OFF SAWS — Wells metal cut-off saws for production jobs and maintenance work are described in bulletin published by Wells Manufacturing Corp. Wet cutting system is described. Saws are of both the vertical and horizontal types for cutting metal, wood, and other materials.

75. ARBORS — Broadside presents a collection of Amtec arbor designs that have been developed for various applications. The Amtec arbor is described as the arbor that solves your concentricity problem. A. Mackmann Tool & Engineering Co.

76. TORQUE HOOK — Circular describes The Elizabeth Iron Works Diamond Torque Hook for handling steel beams, girders, channels, plates, etc. easily, efficiently and safely. Elizabeth Iron Works.

77. BORING TOOL Bulletin describes the Gairing block-type boring tool, which is designed for production on rough boring, semi-finishing, and reaming operations.

Cutter-block provides self centering, positive locking, quick inserting of block in boring bar and easy removal without the aid of locating holes or screws, keys, wedges or taper pins. Cutter blocks are furnished with high speed steel blades; cast-alloy or tungsten carbide tipped blades can be supplied. The Gairing Tool Co.

78. DRILL CHIP BREAKER — Bulletin 28161 describes the Continental drill chip breaker which is said to make for faster drilling, longer drill life, better holes, deeper holes, and to be safer and cleaner. Continental Tool Works.

79. INSERTED BLADE MILLING CUTTERS —Bulletin describes the Wesson Varicut "4 in 1" inserted blade carbide milling cutter, which is styled 4 milling cutters in 1—plain, full-side, half-side, staggered tooth. The Varicut is engineered specifically for carbide. This tool is said to make for important savings in time and money. Wesson Company.

80. MILLING MACHINES — Reid Surface Grinders and Fray Milling Machines are described in Bulletin No. 6 issued by Botwinik Bros. of Mass., Inc. Grinders are said to possess exceptional accuracy. Milling machines are of the vertical ram type, plain and back-geared. New Machine Tool Division.

81. COMPARATOR—Bulletin describes the Comtor Quick-Scanning surface comparator, which presents new method of rapidly comparing the surface finish of production parts with a standard. Instrument is said to introduce new standards of simplicity, reliability and speed. Quick action is said to make practical inspection of every piece in a production lot. The Comtor Co.

82. PLASTIC COATINGS, RESINS, MOLDING COMPOUNDS—New booklet for your plastics and coatings file has been issued by Heresite & Chemical Co. Heresite is name of series of highly resistant coatings and relative products, all formulated basically from the same synthetic resins. In addition to its line of pure phenolic resinoid coating materials, booklet covers Butadiene-type resin for tank linings which is resistant to strong caustics, acids and solvents. Heresite laminating varnish and molding compound are also covered.

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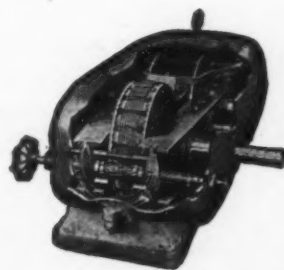
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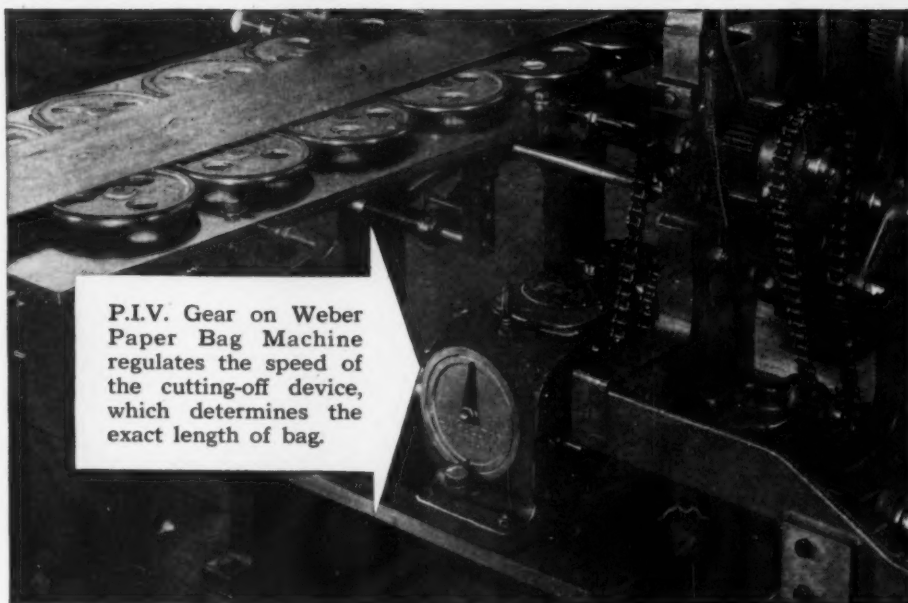
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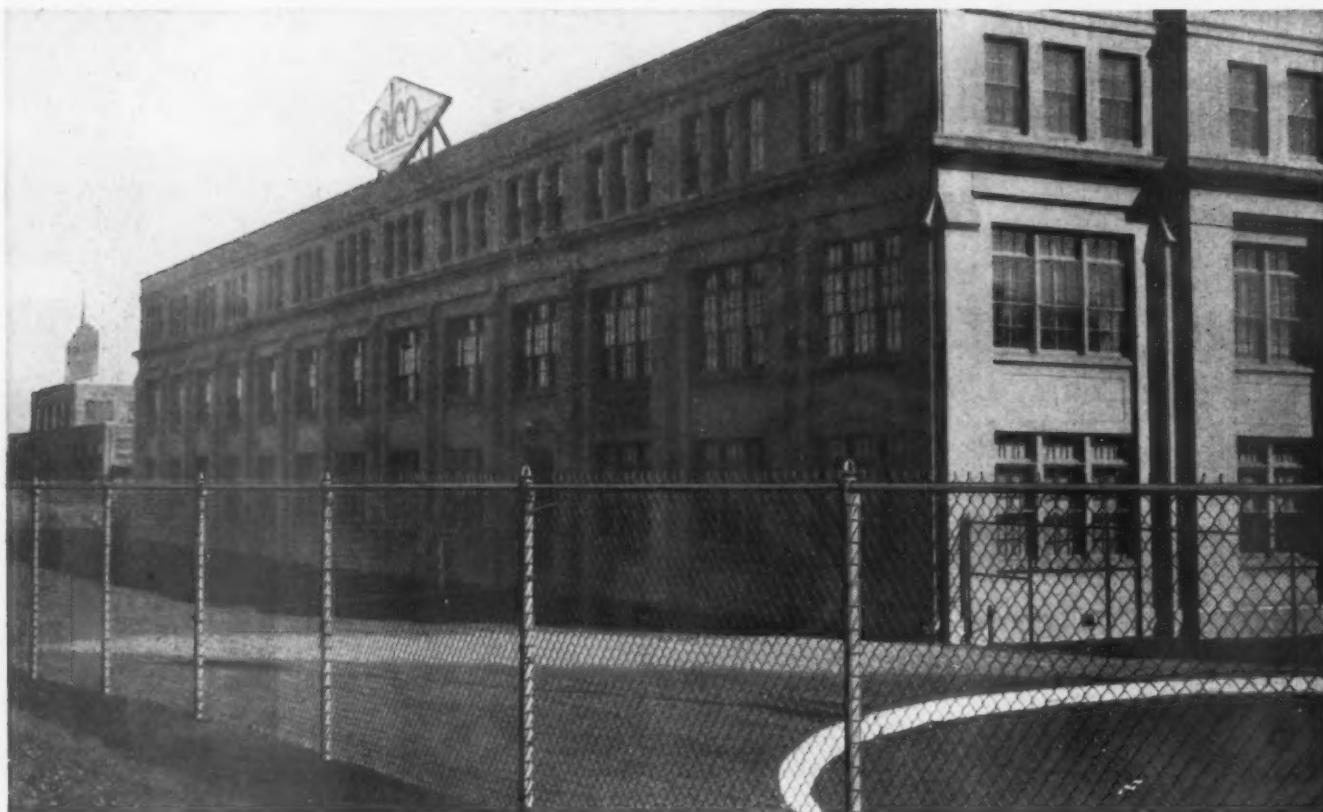
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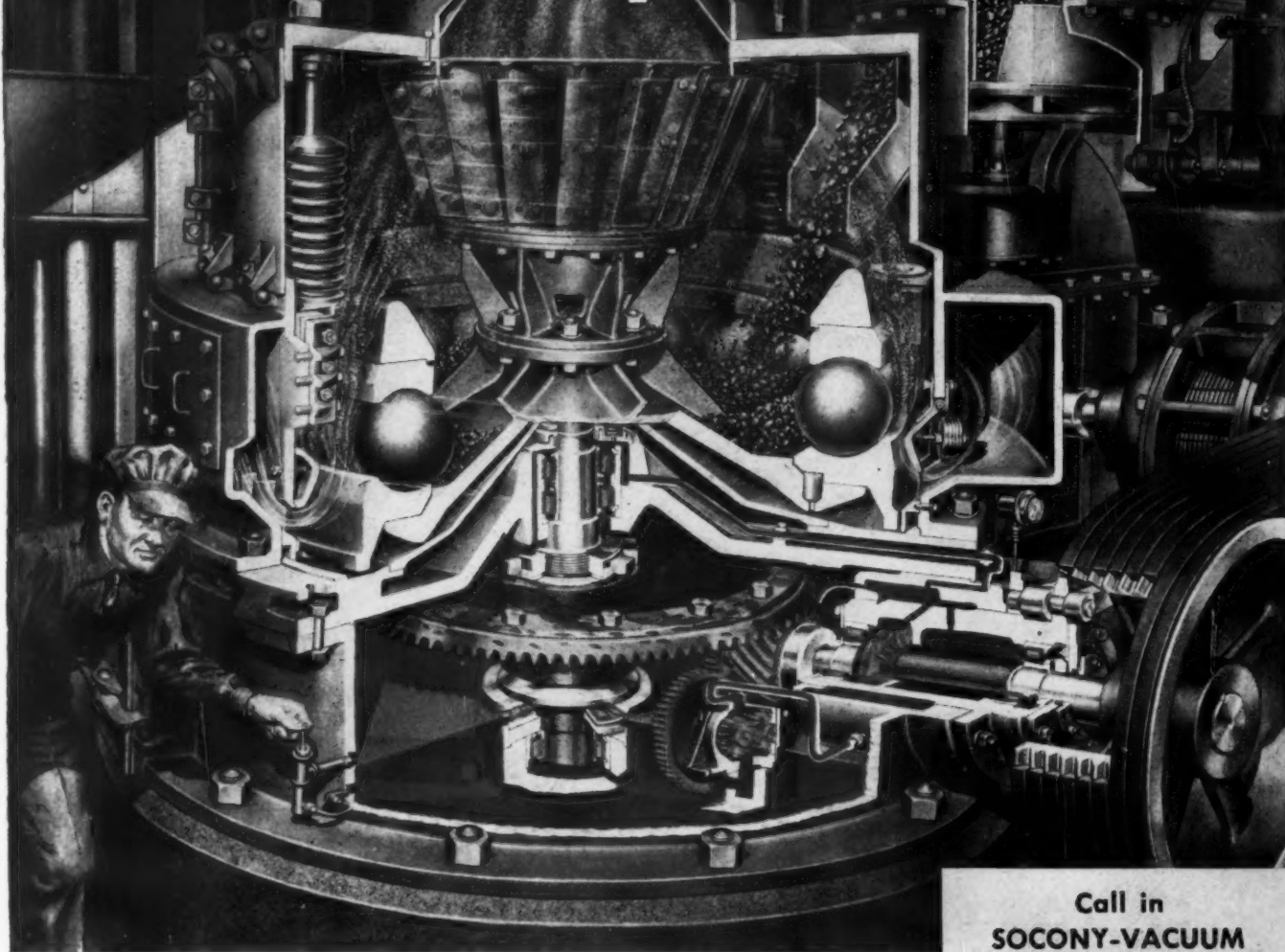


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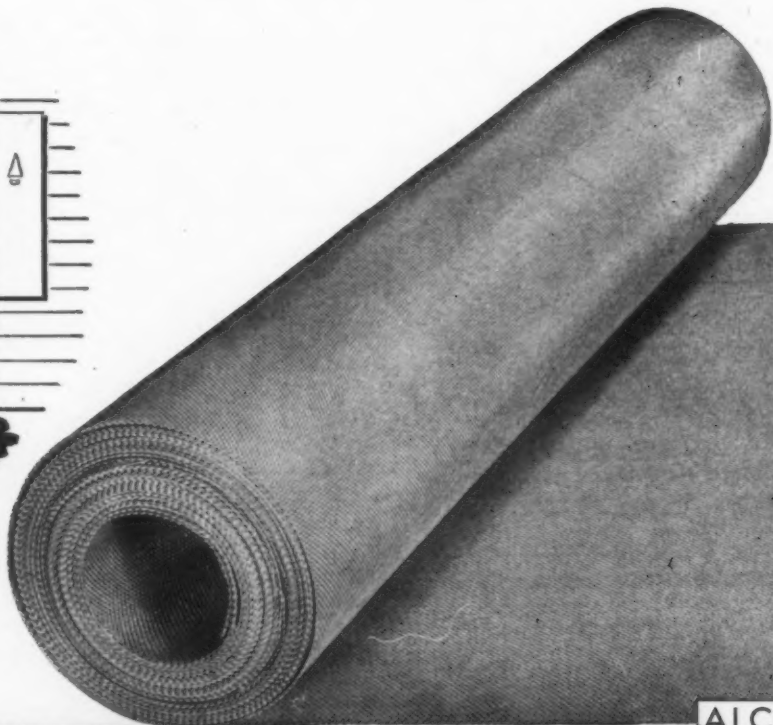
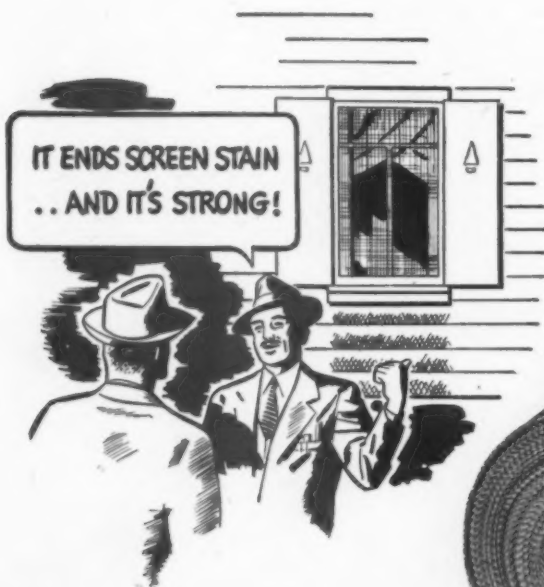
IT ENDS SCREEN STAIN ... AND IT'S STRONG!

No unsightly staining of light paint or masonry, because aluminum can't rust or produce dark stain. Every homeowner will recognize this advantage.

"JUST ANY ALUMINUM" WON'T DO

If it would, this announcement could have appeared years sooner. Alcoa research has long been studying the problems of screen life in various climates—the problems of weaving aluminum wire. Now, we offer proudly the *right* aluminum for screens.

For prices on Alcoa Alclad Aluminum wire or rod for drawing into wire, get in touch with the near-by Alcoa office. Or write ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh 19, Pa.



ALCOA ALUMINUM



IF IT'S AN ADHESIVE
PROBLEM . . .

"PUT IT UP TO

Paisley"

OVER 400 different raw materials and chemicals are used in compounding Adhesive Products, the combinations running into hundreds of thousands of different formulas and variations. The PAISLEY Laboratories are continually perfecting new products or improving existing ones to meet the ever changing requirements of industry.

Many concerns, large and small, national and local, in all fields of endeavor, have found that it pays to know what's going on in Adhesive research—what's new and productive, and most efficient for every labeling, sealing and fabricating operation. They have found extra profits, through production speed-up; lower costs by utilizing PAISLEY Scientific Adhesive Service to obtain the one correct glue, paste or cement to meet the individual operation under study. Large and small users of Adhesives can enjoy the benefits of PAISLEY Scientific Adhesive Service as shipments range from gallon containers to large 55 gallon drums and carlot quantities. When you have an operation requiring Adhesives "Put it up to PAISLEY!"

Paisley
SCIENTIFIC
ADHESIVE SERVICE

EP3
One of the largest manufacturers in its industry with a historical background of adhesive and starch chemistry since 1851.

EP3
Foamless, clean-running, quick-tack Paisley Tightwrap Glue at work in a set-up box plant.

EP3
Fast automatic package wrapping is made possible with Paisley Bundling Adhesive.

EP3
Use Paisley Bottle Labeling Adhesives for all makes of semi or fully automatic labeling machines.

EP3
Quick-setting Paisley Case Sealing Glue featured in hand brushing operation.

EP3
Automatic top and bottom carton sealer applying Paisley ready-for-use Carton Sealing Glue.

EP3
Adhesive machine applications are efficient, economical with Paisley Adhesives (showing edge gumming machine.)

EP3
Paisley Lap Belt Pastes operate more efficiently in all can labeling machines.

Send for
**THIS ADHESIVE
OPERATION
DATA SHEET**

EP3
Here's your guide to getting the ONE best, most efficient adhesive for the operation you describe.

PAISLEY PRODUCTS INCORPORATED

Manufacturers of Glues, Pastes, Resin Adhesives, Cements, and Related Chemical Products

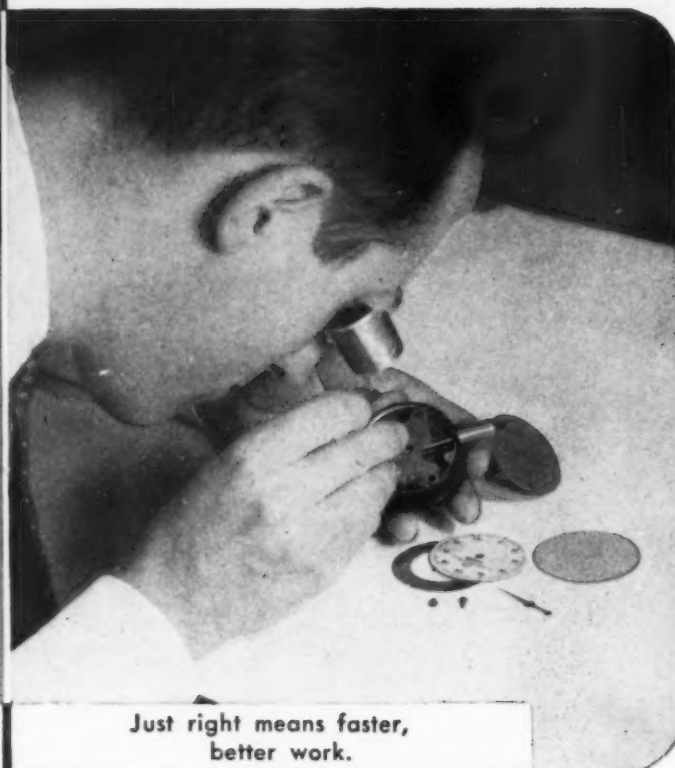
1770 CANALPORT AVE., CHICAGO 16, ILL. ★ 630 W. 51st STREET, NEW YORK 19, N. Y.

BORDERLINE VISION★

May Be Slowing Your Workers



★Just a shade too dark slows down your workers.



Just right means faster, better work.

You Can Speed Up Production With Wheeler Skilled Lighting!

Lighting that's just a shade too dark or too glaring is hard to spot at a glance. But...

Borderline Vision in many a plant means little, individual production slowdowns. Little slowdowns because a careful worker has to look twice to do the job right - because a careless worker may look once and do it wrong. Little slowdowns that add up to an expensive lag in your production.

That's why better, faster work is almost automatic when you put in Wheeler Skilled Lighting. For 64 years Wheeler has specialized in light engineering. Wheeler units are designed to *control* light - to get maximum illumination from standard lamps. Their high reflection factor puts light to work where it belongs: on the job. And their rugged, porcelain enamel-coated construction means longer service and easier maintenance.

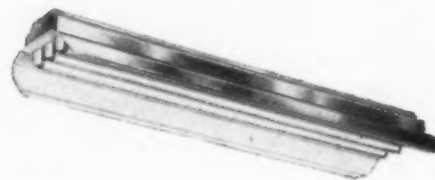
That's why it will profit you to write today for catalogs giving full details on the complete line of Wheeler Fluorescent and Incandescent Reflectors. Wheeler Reflector Co., 275 Congress St., Boston 10, Mass. Representatives in New York and principal cities.

Distributed Exclusively Through Electrical Wholesalers

Wheeler Reflectors

(SKILLED LIGHTING)

MADE BY SPECIALISTS IN LIGHTING EQUIPMENT SINCE 1881



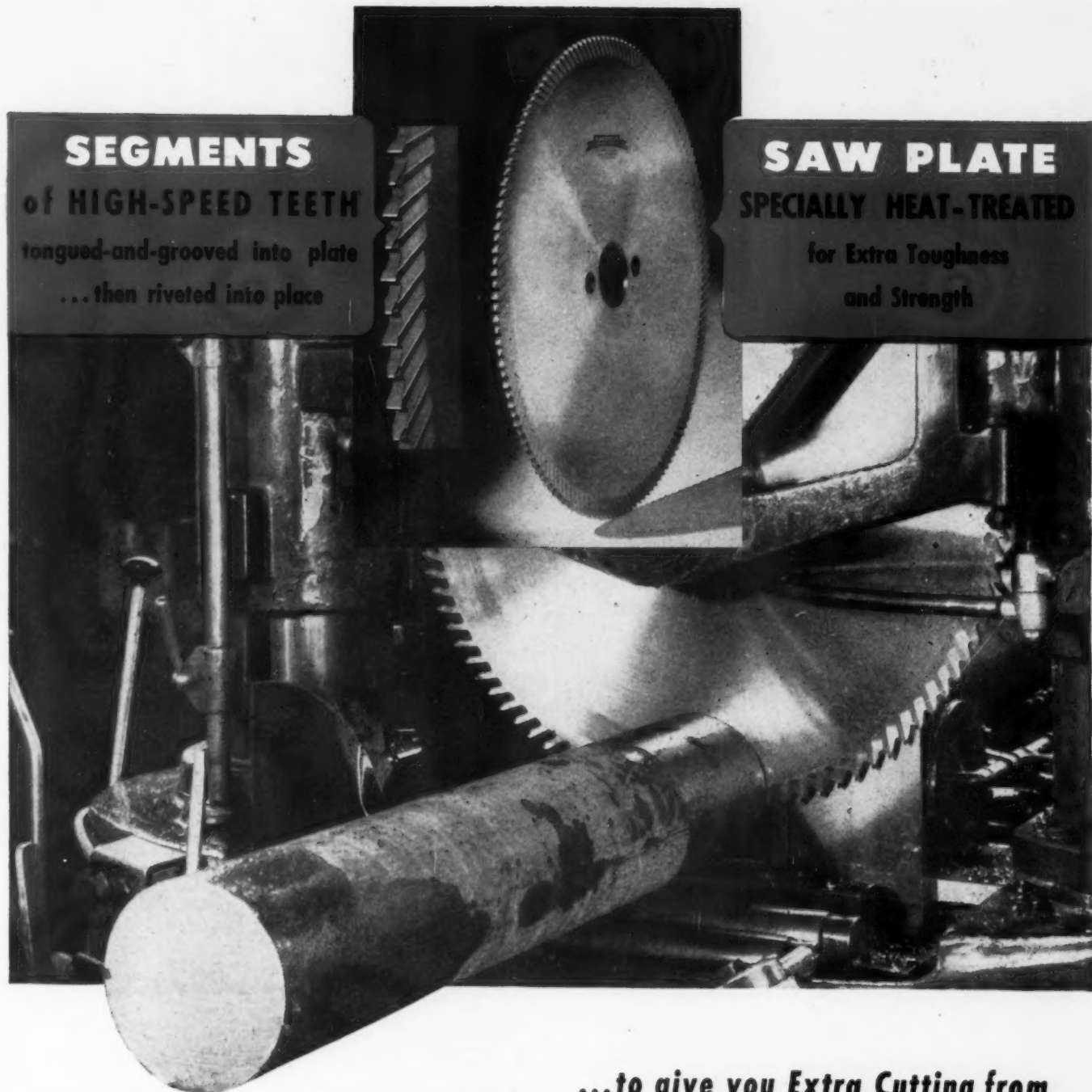
All-Steel Open-End Fluorescent Unit

Available for two or three 40-watt, or two 100-watt lamps. Broad wiring channel with accessible, enclosed ballast. Mounts from chain or conduit, individually or in continuous runs.

RLM Solid Neck Incandescent Reflector



Maximum lighting efficiency for either indoor or outdoor use. Expertly designed, ruggedly built. 75 to 1500 watts.

**SEGMENTS****of HIGH-SPEED TEETH**

tongued-and-grooved into plate
...then riveted into place

SAW PLATE**SPECIALLY HEAT-TREATED**

for Extra Toughness
and Strength

This fine-tooth saw delivers maximum cutting-life on work requiring a fine pitch or specially smooth cut. Double-lap construction, with teeth-segments secured *and aligned* in place by 5 rivets, gives greatest tension and torsion strength... and makes the saw run true, *without vibration or chatter*, under the highest cutting pressure. Special tooth-design channels the coolant right to the cutting edge, so that dulling from friction-heating is long deferred. And even when teeth do dull, the segments are quickly and easily replaced. Order Simonds Segmental Saws from your Industrial Supply Distributor, or get in touch with the nearest Simonds office, listed at the right.

...to give you Extra Cutting from

SIMONDS

SEGMENTAL

Metal-Cutting Saws

BRANCH OFFICES: 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S.W. First Avenue, Portland 4, Ore.; 31 W. Trent Ave., Spokane 8, Washington. *Canadian Factory:* 595 St. Remi St., Montreal 30.

SIMONDS
SAW AND STEEL CO.

FITCHBURG, MASS.

PRODUCTION TOOLS FOR CUTTING WOOD, METAL, PAPER, PLASTICS

WE'RE NOT SATISFIED WITH A **once over**



Sometimes even an "eagle eye" doesn't catch certain details. Here at General Industries we know you'd not be content with just a visual inspection of finished plastics molded pieces. Instead, accurate and scientific testing devices tell us that your product is right when it leaves our plant.

Our plastics molding combines special skills and experience with the most modern equipment and mechanical discoveries. This combination assures high quality... pays dividends in increased salability.

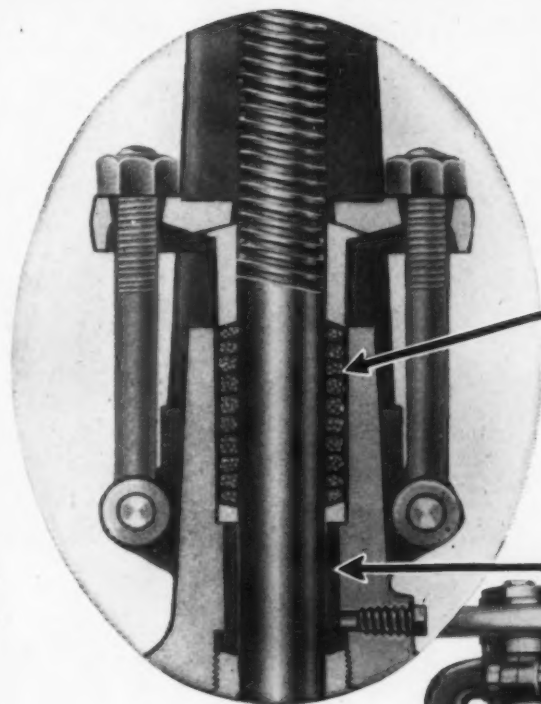
No, we're not satisfied to make your product just good. We want it to be outstanding. That's why our mold makers pay special attention to accuracy . . . why we've added heatronics to our plastics molding team . . . why we devote the utmost care to the finishing process . . . and why our final inspections are done with precision instruments and meticulous attention to details.

Consult us on *your* plastics molding problems, without obligation, for the best service that science and human ability can provide.



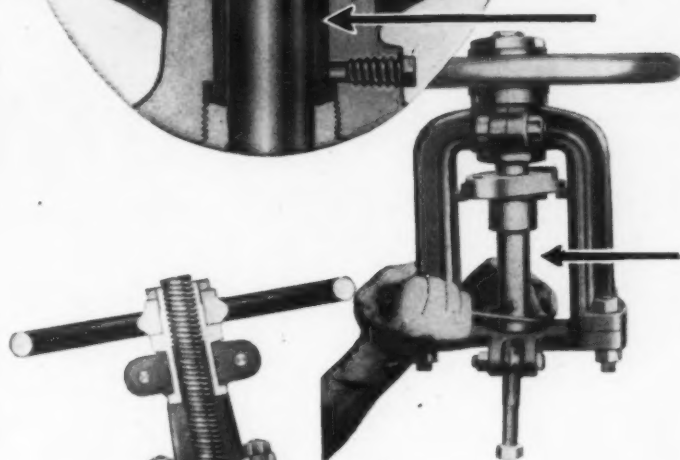
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How OIC Improves VALVE PERFORMANCE



1—Stuffing box is especially designed so that packing retains life and resilience as the packing nut is tightened from time to time.

(The equalized compression provided by the special design of OIC packing glands can lengthen the life of packing as much as 10 to 20 per cent compared to other designs.)



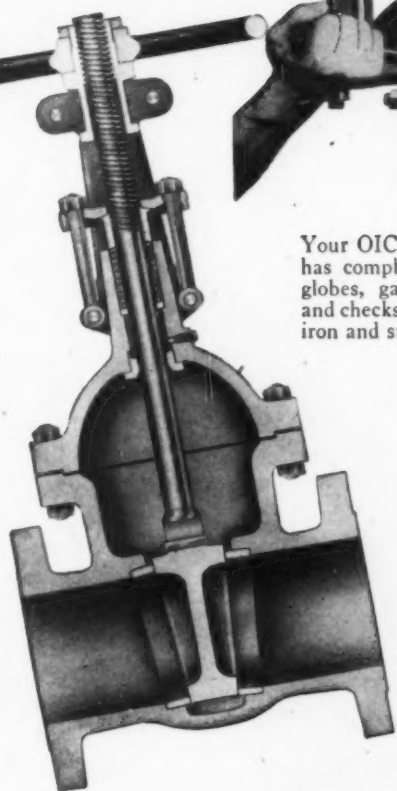
2—For installations where heat is an enemy of packing life a condensing chamber below the stuffing box minimizes heat deterioration.

(Condensing chamber design is a special feature of OIC Valves for applications involving high temperatures.)

3—Simplified repacking eliminates lost motion, reduces time required for repacking when needed.

(The LIFT-LOK, exclusive with OIC, is a self-contained feature which automatically holds gland and follower out of the way while the valve is repacked.)

Your OIC distributor has complete lines of globes, gates, angles, and checks—in bronze, iron and steel.



OIC VALVES

THE OHIO INJECTOR COMPANY, WADSWORTH, OHIO

NEOCETA BRUSHES

*spreads
paint
readily*

"The Fascinating Story of Neoceta"—an intensely interesting booklet—is yours for the asking. Write to nearest Pittsburgh branch for your free copy.



WEARS LIKE PURE HOG BRISTLE



**HOLDS JUST THE
RIGHT AMOUNT OF PAINT**



DOESN'T MAT OR FINGER



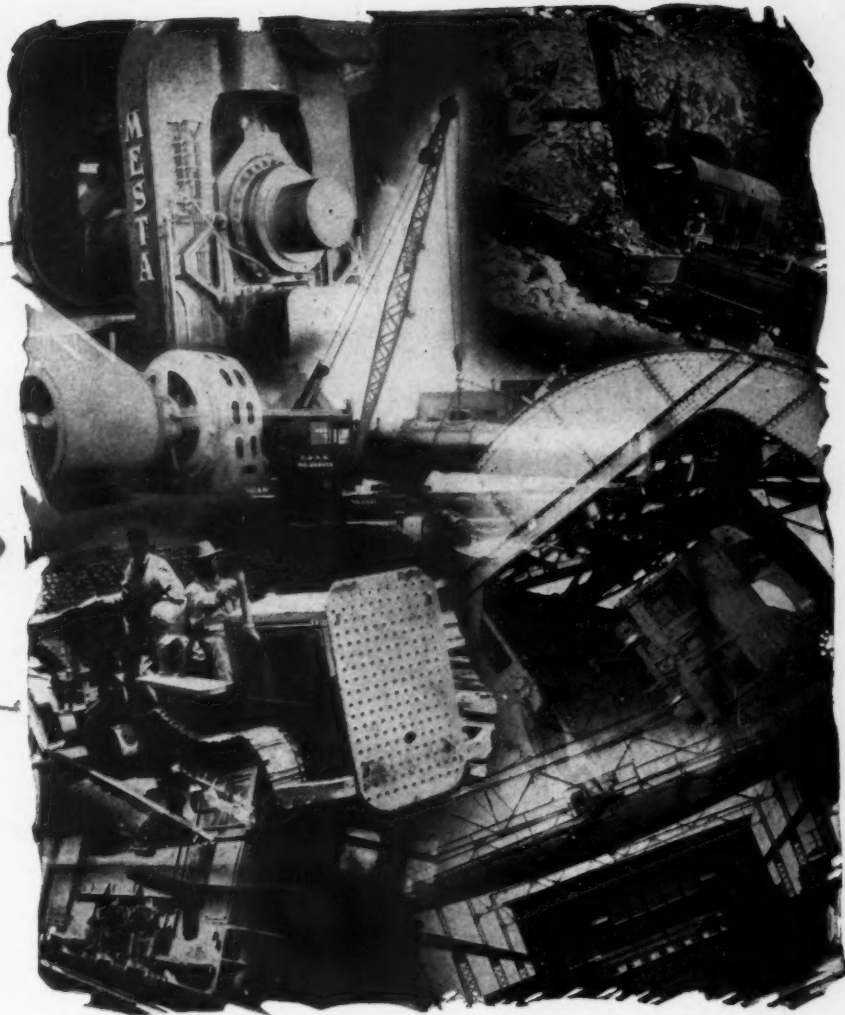
**KEEPS ITS STIFFNESS IN
PAINTS CONTAINING WATER**

Brush Division
PITTSBURGH
PLATE GLASS COMPANY



**5 YEARS
OF
NATIONAL USE**

*"No
bearing
troubles..."*



with Tycol E.P. Lubricants"

- Not a bearing overheated ...
- Service-life doubled ...
- Races undamaged ...
- Better performance ...
- Maintenance costs cut ... ■

— were the statements made recently by a lubricating engineer. "Yet," he went on, "the anti-friction bearings in our plant operate continuously under severe heat and moisture conditions — tremendous loads."

This is one of the many uses of Tycol E. P. Lubricants. For more information call, write, or wire your nearest Tide Water Associated Office.

LUBRICATION—"ENGINEERED TO FIT THE JOB"



Boston • Charlotte, N. C.
Pittsburgh • Philadelphia



*What size
is this
Socket Screw?*



EXPERIENCED MEN GUESSED WRONG 50% OF THE TIME!
Tests have shown that even experienced men have guessed wrong on size and thread pitch of socket head cap screws 50% of the time.

SINCE THEY CAN'T BE SURE, your assembly workers must take time to find out — time for "miking" and gauging to check the size — time for tedious sorting when screws get mixed up.

There's No Guessing when it's Size-Marked!

On the heads of P-K Socket Head Cap Screws, the size is clearly marked — seen at a glance.

THERE'S NO TIME WASTED —

AT THE TOOL CRIB — Left-over, mixed up screws are quickly replaced in the right box or bins, without slow "miking" or gauging.

AT THE JOB — Assemblers work faster — take no time out "going back" to replace a size issued incorrectly.

TRAINING NEW HELP — Even new assembly workers can be trusted with P-K Size-Marked Socket Screws — make no costly errors.

BY MAINTENANCE MEN — Your customer's repairmen will appreciate the Size-Mark in disassembly and reassembly. It gives your product an extra sales feature.

Plus GEAR GRIP*

With Gear Grip, which prevents slipping and fumbling, the Size-Mark gives P-K Socket Head Cap Screws a double feature that puts them years ahead in utility and performance.

*U. S. Pat. No. 126,409

Only PARKER-KALON offers
Socket Head Cap Screws with
SIZE-MARK and GEAR GRIP



Another P-K Plus Value! GROUND THREAD SOCKET SET SCREWS

Thread grinding provides a smooth, bright, gleaming finish that has none of the nicks, burrs, tool marks, hardening scale, or imperfections common to ordinary cut thread set screws. Made from hardened stock, with the characteristic smoothness of a ground finish, these screws are as different from ordinary set screws as night and day!

Seeing is Believing!

Send for this unique SAMPLE KIT. Compare. You'll agree your assemblies deserve the many advantages of these 3 extraordinary P-K improvements. Write today! Parker-Kalon Corp., 200 Varick St., New York 14.



SOLD ONLY THROUGH ACCREDITED DISTRIBUTORS
PARKER-KALON *Cold-forged* **SOCKET SCREWS**



Stack Drilling? What drill feed should be used in drilling $\frac{3}{8}$ -in. holes through clamped stacks of 20-gage, E-S 18-8 Mo stainless (Type 316) sheets?

Bevel Milling? In beveling E-S 18-8 low-carbon stainless (Type 304) plate edges before welding, must we decrease the speed or feed of the milling cutter as the cut widens?

Hole Size for Tapping? What diameter reamer should be used on holes in titanium-bearing E-S 18-8 plate (Type 321) to be tapped for $\frac{1}{4}$ "-32 threads?

Saw Tooth Set? Is any special set required in the teeth of a band saw for cutting light-gage E-S 18-8 stainless sheet (Type 302)?

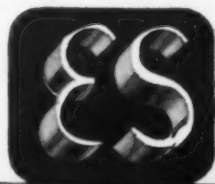
Punch-Marking? Can we punch-mark drill holes in E-S 18-8 chrome-nickel plate (Type 304)? What is the best way to start holes at an angle with this plate?

Counterboring? Is reaming likely to harden E-S 17-7 Stainless (Type 301) so much that counterboring is difficult? What is the remedy?

Machining stainless, like handling any other important metal, requires the right technique. When you know how, it is simple. When you need help, get in touch with Eastern. Eastern technical men have worked with stainless so much that they have the right advice at their fingertips. There is a lot of good advice, too, in Eastern's booklet, "Eastern Stainless Steel Sheets." A copy is yours for the asking.

JML:co E-E1

*ask
Eastern
for the
answer
when
Stainless
is the
question*



**EASTERN STAINLESS
STEEL CORPORATION
BALTIMORE 3, MARYLAND**

Don't leave it to chance



IN CHUCK-A-LUCK — the odds are 215 to 1 against three of a kind; 13.4 to 1 against two of a kind. Paying even money on the singles, two-for-one on the doubles, and three-for-one on triples, Chuck-A-Luck always gives a 7 47/54 percentage in favor of the "house".

LEAVE IT TO -

HY-TEST

THE SAFETY SHOE WITH THE
ANCHOR FLANGE

STEEL BOX TOE



This flange adds extra strength to the steel arch's sidewall. Anchored between insole and outsole, it also serves to resist shifting and tilting when toe is struck at an angle.

Hy-Test Safety Shoes were first manufactured to give workers a big safety margin against accident odds. And new ways are always being found to increase this margin as the years go by. One of the greatest protective features to make Hy-Test an even better safety shoe is the use of the Anchor-Flange Steel Box Toe. This flange not only gives added strength but also helps keep the steel toe from tilting or shifting when it is struck at

an angle. The anchorage is made by sealing the steel toe's flange between the insole and outsole. This extra safety feature, plus the sturdy leathers and fine workmanship always found in Hy-Test, provides workers with a comfortable, easy-wearing safety shoe that lasts longer and gives better protection. We will

be glad to show you how easy it is to have this extra margin of safety for workers in your plant. Just drop us a line.



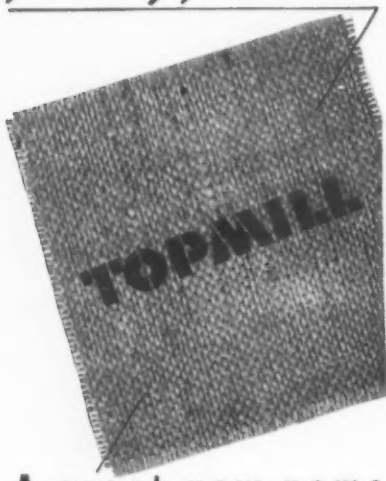
THE WORLD'S LARGEST SELLING SAFETY SHOE

HY-TEST *Safety Shoes*

HY-TEST DIVISION • INTERNATIONAL SHOE COMPANY • ST. LOUIS 3, MO.
EASTERN OFFICE • MANCHESTER, N. H.

CHASE

proudly presents



A great new name on burlap

•Yes, it's a great new name—and it means great new things for buyers of burlap bags. It means, first of all, that Chase is again importing burlap direct from India's top mills.

But even more, it means this burlap has had to meet Chase's rigid specifications. Specifications, by the way, that are based on nearly one hundred years of experience in making burlap bags for every purpose.

Chase TOPMILL has been thoroughly tested for tensile strength, and inspected for finish and appearance before it was made into bags. Remember this great new name—TOPMILL—it's tops for many uses!

Right now, with a shortage of cotton bagging, you can probably find additional uses for TOPMILL burlap bags. For example, feed, flour, seed, fertilizer and hundreds of other products can be packed in TOPMILL. Consult today with your Chase representative.



CHASE BAG CO.

GENERAL SALES OFFICES

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BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MINNEAPOLIS
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NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY • OKLAHOMA
CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS
CHAGRIN FALLS, O. • HUTCHINSON, KAN. • WINTER HAVEN, FLA.

F.O.B. *Philosophy of buying*

Optimist. On the cross street that is our route from the station to the office, a sign appeared at the curb on the morning of May 6th. It read: "No Parking. Expect Coal." Morning and evening, from the 6th through the 10th, we noted that the sign was still hopefullly in place; then it was withdrawn. No coal had been delivered, but the landlord was no longer expecting.

Purchasing in Reverse. The Common Council in Detroit has passed a resolution authorizing the city purchasing department to cancel contracts "when unforeseen OPA ceiling increases make it impossible for contractors to deliver their goods at the price agreed upon." This is a curious interpretation of ceiling price regulations. It provides relief for the seller, but the only relief for the poor P. A. is the doubtful privilege of advertising for new bids.

Rubber Stamp. When Purchasing Agent T. A. Barry of Lawrence, Mass., recently placed sizable orders for hydrants, a pick-up truck, and an oil burner, there was consternation at the City Hall. Said Mayor Meehan: "If Mr. Barry has entire control, we'd just be rubber stamps here." Thus a classic appellation is turned in a new direction.

Point of View. A survey of the use of expeditors among industrial concerns, recently conducted by the *New York Journal of Commerce*, reports that a company's own expeditors are generally referred to as "procurement agents" whereas their customers' expeditors are regarded as "blackmailers."

Earful. At the invitation of Congressman James G. Fulton, some 200 representatives of surplus priority holders in the Pittsburgh district met with Deputy Administrator W. E. Joyce of the War Assets Administration the other day and gave him three hours of detailed evidence of what they thought of surplus operations. A small manufacturer has a cancelled check for \$8,000 as evidence of his successful bid on a ma-

chine tool, but the machine itself can't be located by WAA. Out of thousands of dollars of bids, a high priority school district has landed just 50 cents worth of electric welding hose, and the county government has been able to spend only \$49. A staff sergeant of Marines found the service of the local office limited to certifying that he was a veteran, which he already knew. Mr. Joyce was not authorized to make any commitments but promised to have a "Pittsburgh Plan for Surplus" ready within two weeks.

Casualty. When City Purchasing Agent R. H. Letendre left Manchester, N. H., in January 1944 on a leave of absence to do a turn with the Army, the department was temporarily closed. When he returned in April 1946, it was officially abolished, but only after a long and bitter debate, suspension of rules, and six roll calls. Mayor Beniot was instructed to find the Ex-P.A. a suitable position in the municipal service at equivalent salary. Manchester's purchasing department was in actual operation less than one full year.

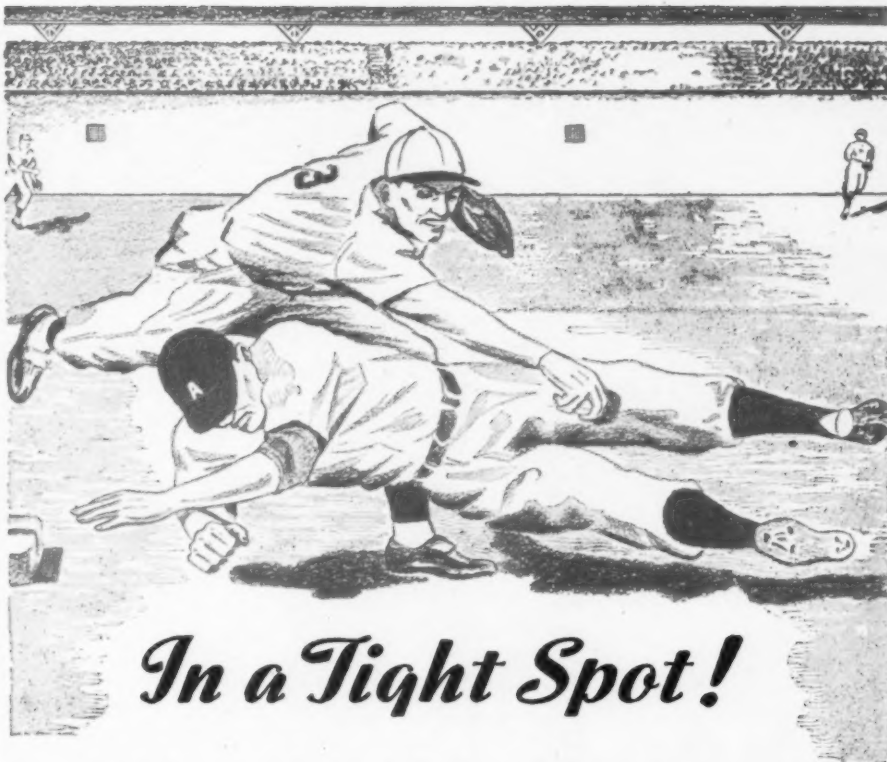
Black Market. Looking over the follow-up system in a harrassed purchasing department the other day, we noticed, along with the array of bright colored tabs affixed to the cards to catch the buyer's attention a long row of somber black ones. The answer: these represent plants out on strike, where obviously no follow-up action could be of any avail.

Oldest Inform-a-Show. Dean of all the world's industrial exhibits, with a continuous record of several centuries of annual displays until the interruption caused by World War II, the Leipzig Trade Fair was reopened in May. Operating under many difficulties, and in the zone of Russian occupation, the Fair nevertheless assembled some 2,000 industrial and business displays, and the crowds gathered around all of the displays gave striking evidence of interest and eagerness to buy. But

while there were many indications of industrial recovery, the general keynote was one of frustration. Few of the wares were actually purchasable. Delivery promises ranged from one to two years. Average quality was distinctly on the inferior side. In most cases, even on furniture and household goods, orders were acceptable only on the proviso that the purchaser supply an equivalent amount of the component materials. Approximately 60% of current production is destined for Russia (which is supplying the bulk of raw material), leaving only inadequate supplies for domestic consumption. One of the exhibitors, whose plant has been completely dismantled and put out of operation, hopefully reasoned that a showing of what he had done before the war might persuade the conquerors to allow him materials for a new factory.

Tentative Employee. Dave is working for the Allegheny County (Pa.) Park Commission, and apparently doing a satisfactory job, but he may lose his position on a technicality. Dave is a dray horse, duly selected, requisitioned, and purchased for \$200, but without the formality of getting competitive bids. The transaction seemed all in good order, since the bidding requirement is normally waived on purchases of less than \$500, until Purchasing Agent M. M. Donohue pointed out that all purchases of livestock are exceptions to this rule, and that advertising for bids is mandatory. So if some competitor shows up with an equally sound animal at a lower price, Dave will have to forsake the green pastures of South Park and go back home. The park directors are somewhat disturbed over the situation, but Dave doesn't seem to care one way or another.

Multiple Job. John Hayen holds the dual office of Purchasing Agent and City Manager at Edmond, Okla., but that doesn't begin to describe his manifold duties. He hires and supervises all municipal employees, manages all water and light plants, collects the bills and settles the complaints, makes up the budget and rate schedules, puts over the bond issues, and turns in a nice profit on the city-owned hogs that handle the garbage disposal problem. A practical electrical and construction man, and a loyal native son, he has on more than one occasion climbed into his overalls and worked all night to help clean sewers or fix a break in the electric lines.



In a Tight Spot!

In industry, as in baseball, dependable performance is what counts . . . that's why "HERCULES" (Red Strand) Wire Rope is so often called into play when a crucial job is at stake.

Its dependability is not a matter of chance, since its design and construction is the result of careful planning, diligent research, long experience and advanced manufacturing facilities.

You will never go wrong . . . no matter how "tight the spot" if you select "HERCULES" (Red Strand) Wire Rope. Being made in Round Strand and Flattened Strand construction — Preformed or Non-preformed, your requirements can always be filled —satisfactorily!

Your inquiries are welcome . . . and we invite them.



MADE ONLY BY
A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS
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ESTABLISHED 1857
ST. LOUIS 12, MO.

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Derrick Men Know Good Rope

American Manufacturing Company makes a full line of first grade oil field cordage. "AMERICAN BRAND" Pure Manila Catlines, Spinning Lines, Shooting Lines, Cables and Crackers are made

to the specific requirements of the particular job each is to perform. That's the reason why the performance of all "AMERICAN BRAND" ROPE is so consistently high and completely satisfactory.



"American Brand" CORDAGE

ROPE • TWINE • OAKUM • PACKING

A Complete Line from One Source of Supply

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Branch Factories: ST. LOUIS CORDAGE MILLS, ST. LOUIS 4, MO. • DELAWARE RIVER JUTE MILLS, PHILADELPHIA 48, PA.
Sales Offices: BALTIMORE • BOSTON • CHICAGO • HOUSTON • NEW ORLEANS • PHILADELPHIA

THE ECONOMY HOSE CLAMP

*for every
industrial
purpose*



MAXIMUM CLAMPING POWER CUTS LEAKS...LOSSES...REPLACEMENTS

For maximum clamping power on hose lines where you want to cut leaks... reduce losses... and eliminate costly replacements—specify Diamond G Hose Clamps. For connections in automotive, pneumatic, hydraulic, electric, marine, railway, and other applications, they are the economy clamp for every industrial use.

Diamond G Hose Clamps have been designed, developed, and proved in service to be the ideal clamp where low cost and high operating efficiency are the key factors.

Each and every Diamond G Hose Clamp is rust proof for protection and long life under all operating conditions. The "captive" nut, guarded by sturdy flanges, assures a positive tight grip. Heavy duty reinforced shoulders, plus powerful spring action provide uniform pressure and grip around the circumference.

Whatever your need in hose clamps, Diamond G has the answer for you. A complete range of sizes for delivery of air, water, gasoline, oil, and chemical. For full details write—

GEORGE K. GARRETT CO., INC.
1421 CHESTNUT STREET, PHILADELPHIA 2, PA.
MANUFACTURERS OF



DIAMOND PRODUCTS

LOCK WASHERS • • FLAT WASHERS • • STAMPINGS • • SPRINGS • • HOSE CLAMPS • • SNAP AND RETAINER RINGS

Riegel

WAGON
BRAND

WORK GLOVES

These strong, protective work gloves are the product of one of America's largest textile mills. They are Riegel-controlled — in one plant — from raw cotton to finished glove. This supervision of every detail results in unexcelled quality — durability — economy



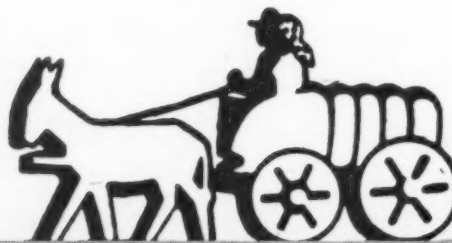
RIEGEL TEXTILE CORP., 342 Madison Ave., N. Y. 17, N. Y.

Riegel

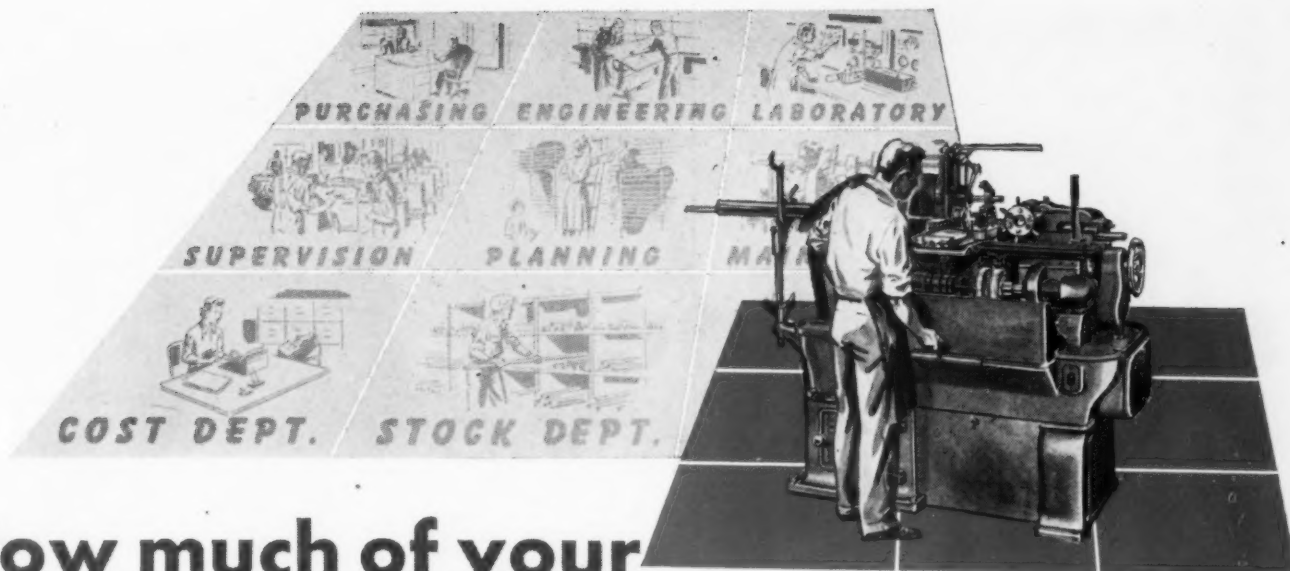
WAGON
BRAND

WORK GLOVES

These strong, protective work gloves are the product of one of America's largest textile mills. They are Riegel-controlled — in one plant — from raw cotton to finished glove. This supervision of every detail results in unexcelled quality — durability — economy



RIEGEL TEXTILE CORP., 342 Madison Ave., N. Y. 17, N. Y.



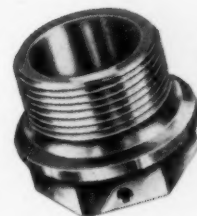
How much of your Overhead Shadow can you charge to Profit—and Loss?

Your overhead shadow is always with you. When it falls across a "simple screw machine job" that you could buy outside, it can easily make the operation look like a "loss leader."

Figure it out: Suppose you need some special part for your assemblies. You have a few automatics and the men to run them, so you make the parts. Your Purchasing Agent buys the bars — Engineering lays out the detail — Laboratory tests samples of stock and output — Supervision sets up the jobs — Planning schedules them — Maintenance keeps things running — Cost Dept. makes special entries — Stock Dept. has raw material as well as finished product to keep track of — and your too-busy Tool Room has extra work to do!

Now look at this side: You send your blueprints and specifications to CORBIN SCREW. We can reproduce exactly as specified — or possibly we can suggest changes in design, stock and method to improve quality, performance, or cut costs. We manufacture in a plant equipped with thousands of metal-working machines including headers, screw machines, grinders, thread rollers . . . we inspect and deliver according to schedule . . . and the economy is evident when you consider your cost *plus overhead*.

Your Overhead Shadow is always with you. Why not use it only where it's needed? Let's talk it over.



P-4
CORBIN SCREW DIVISION
The American Hardware Corporation
NEW BRITAIN • CONNECTICUT

Warehouses:
New Britain • New York • Chicago

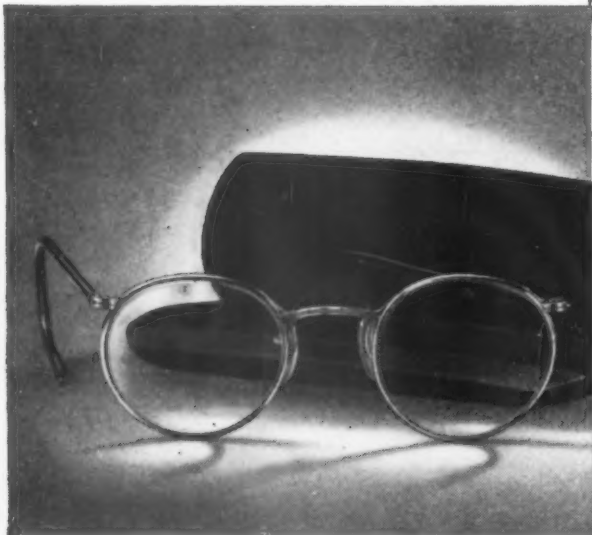


COME TO "CORBIN SCREW" FOR PROFITABLE

Production Parts

skilled men

wear safety goggles



and they

prefer A-O metal ful-vues for
comfort and appearance

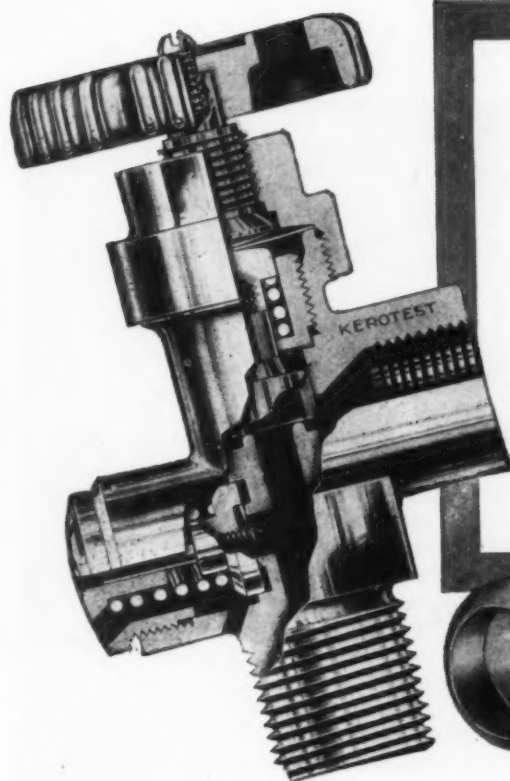
*A-O Safety Goggles
Safeguard the Eyes
of Industry*

Skilled workers appreciate the comfort and good appearance of A-O Ful-vue Goggles. They provide all-angle vision and are shaped to conform to the orbit of the eye (thus, bringing the lenses closer to the face and leaving no unprotected area around the bridge of the nose). Made in three eye and three bridge sizes, with 6-curve Super Armor-plate Clear or Calobar lenses—with or without side shields. Your nearest A-O Safety Representative can supply you.

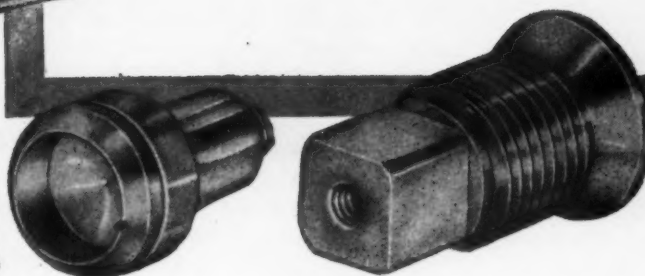
American  Optical
COMPANY

Safety Division

SOUTHBRIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL INDUSTRIAL CITIES



PRODUCT IMPROVEMENT THROUGH DURONZE III



*Kerotest cylinder valve
for Carbon Dioxide.
Note stem and spindle
are made of strong, de-
pendable Duronze III.*

... for long wearing valve stems and spindles!

Cylinders containing compressed gases for welding, cutting, fire-fighting, petroleum refining, chemical processing and other important tasks, need rugged flow-control valves—Kerotest valves that industry turns off and on with complete confidence. Contributing to positive assurance against premature breakage and wear are valve stems and spindles made of Bridgeport's Duronze III, silicon aluminum bronze.

Duronze III meets Kerotest's requirements for these critical functional parts with a combination of properties ideal for the job. Duronze III is exceptionally strong—a tensile strength of 85,000 psi in the annealed condition. It also has exceptional resistance to corrosion, wear and fatigue. This alloy machines freely (about 50 to 75% as fast as free cutting brass); has a low coefficient of friction; can be readily hot forged (90,000 psi in tensile strength).

In the interest of product improvement, check carefully highly stressed parts, that wear out or fail too rapidly, against the fine physical properties of Duronze engineering alloys. You may find here an opportunity to improve the performance of your product; to lessen weight; to reduce costs of machining and finishing; to speed up assembly; and to prolong service life and wear.

For many screw machine items, pole line hardware, wire and cable connectors, oil burner nozzles, thrust screws, valve parts and an almost endless list of other products, Bridgeport's engineering alloys are a logical choice and a sound business investment. There's a Duronze Manual, with 80 pages of technical data and suggested applications, ready for you on request.

**BRASS • COPPER
BRONZE • DURONZE**

**Strip • Rod
Wire • Tubing**

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Milwaukee 2, Wisconsin, 715 N. Van Buren St.
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BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. • ESTABLISHED 1865

McGILL

SOLIDEND

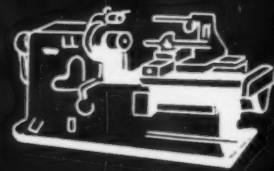


MULTIROL

Bearings



Designed as a self-contained unit, with races and rollers made from through-hardened high-carbon chrome steel, there are no loose parts to warp or break. The solidend shoulder construction and retaining lip, built integral with the outer race, hold the rollers, eliminating any possibility of the bearing coming apart during installation or operation. Rounded end, full length rollers give greater load carrying capacity, and close tolerance in construction, increases the overall efficiency. Where it is necessary to conserve radial space the bearing can be used without the inner race and the bearing mounted directly on the shaft. Provision for incidental thrust is provided along with adequate lubrication facilities. Write for Bulletin SM-42. If you have a special bearing problem McGill engineers will be glad to cooperate in working out a bearing to fit.



FOR ALL TYPES OF
INDUSTRIAL EQUIPMENT

McGILL MANUFACTURING CO., INC.

MANUFACTURERS OF BALL AND ROLLER BEARINGS

— VALPARAISO, INDIANA

*Thank You.
Mr. Webster*

for clearing up the difference
between "rebuilding" and
"reconditioning" government
surplus machine tools.



REBUILD (rē-bīld), *v.t.* To build again or to construct anew, usually the parts that are in good condition being used; as, to *rebuild* a house, a wall, a typewriter, a wharf, or a city.

RECONDITION (rē-kōn-dīsh-ŭn), *v.t.* To restore (something worn) to sound condition by re-adjustments, and replacement of parts. To renovate; as, a *reconditioned* automobile.

From Webster's New International Dictionary, Second Edition. "THE SUPREME AUTHORITY"

Many of the Government Surplus Machine Tools are ready to use "as is". Many more need rejuvenation before they will function properly. The amount of rejuvenation necessary is the important thing to every prospective purchaser.

Read again the two definitions above. *Reconditioning* and *Rebuilding* are two distinct processes. The former can be undertaken by any good mechanic provided he does not have to replace vital parts. But *rebuilding* is a function that should be entrusted *only to the original builder of the machine*. He alone knows all the details that must be made right before that machine can be expected to deliver the service for which it was designed.

At Pratt & Whitney we are ready to offer you either

reconditioning or rebuilding service on Pratt & Whitney machine tools. If you are looking for one of our machines we urge you to contact our nearest branch office at once. Our men can help you right from the start . . . help establish specifications for the machine you need . . . help you locate it by working with the RFC office. They will help you make sure that you are not getting a "special" machine that will require so much alteration that a new machine would cost you less . . . make sure that the machine you do buy is good for many years of efficient, economical service.

Call upon your Pratt & Whitney Branch Office for this help, this guidance. They are organized to serve you under our Approved Dealer arrangement with the government War Assets Corporation.

PRATT & WHITNEY

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WEST HARTFORD 1, CONNECTICUT





P&H

AC-3

CLASS AWS-ASTM
E6013

FOR QUICK, SLICK WELDING JOBS

In production welding — in small welding shops — everywhere it is used, AC-3 quickly wins preference for ease of handling.

AC-3 welds fast . . . lays in smooth, flat beads. Its spray-type arc gives medium penetration — eliminates thin gauge "blow-throughs." Here in one electrode are all the features you want for welding light gauge or heavy steels.

Slag removal is easy — it virtually "curls off." It's used on both AC or DC for all-position work. And with it, you can weld *lighter* metals with *larger* electrodes — you can obtain far greater production. Distortion and under-cutting are at an absolute minimum. Its weld metal seals quickly, making it ideal for poor fits and bridging gaps. Start now to let P&H "AC-3" cut your costs and improve the appearance of your product.






In addition to a line of simplified DC welders, P&H's AC welders range up to 1250 amperes. Each is equipped with creep-proof, micromatic control: WSR (Welding Service Range) ratings specifying the exact amount of usable welding current from minimum to maximum. Shown here is the model TWH 500 with a service range of 100 to 625 amperes.



FOR EVERY MILD STEEL REQUIREMENT

There's a production-proved P&H mild steel electrode for every requirement. This partial list shows many that are popular with foremost industries doing large scale-production welding. Get complete information.

SEE YOUR P&H REPRESENTATIVE

| | | |
|--|----------------|-----------------|
|  | "AP" | — AWS — E-6010 |
|  | "AC-1" | — AWS — E-6011 |
|  | "PF" | — AWS — E-6012 |
|  | "AC-3" | — AWS — E-6013 |
|  | "FW" | — AWS — E-6020 |
|  | "DH-2" | — AWS — E-6020 |
|  | "CM-50" | — AWS — E-7011 |
|  | "AW-4" | — AWS — E-10012 |
|  | "AW-2C" | — AWS — E-10020 |

P&H also has a complete line of Electrodes for welding stainless and alloy steels, as well as for hard surfacing.



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WELDING ELECTRODES • MOTORS • HOISTS  ELECTRIC CRANES • ARC WELDERS • EXCAVATORS

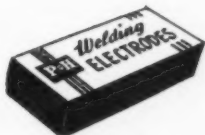
AMERICA'S MOST COMPLETE ARC WELDING SERVICE.



**DC
Welders**



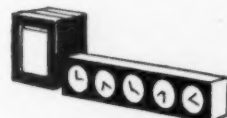
**AC
Welders**



**Welding
Electrodes**



**Welding
Positioners**



**Welding Production
Control Systems**



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Hoists**

TESTING Re-Testing... and Testing again

... that's how the
"INFORMATION CENTER"
determines the *right
AMERICAN PHILLIPS SCREW for your job

The *right American Phillips Screw for your job is more than just a *type* of screw. It's the *predetermined combination* of type, size, metal, head, and finish which best meets tests approximating the requirements dictated by your assembly methods, and by the service conditions your product has to meet.

Here in American's Engineering Research Laboratory is all the equipment and experience to pre-design any screws you need for any job. Here engineers and trained technicians work with the most modern machines for testing physical strengths, and resistance to heat, corrosion, electrolysis, wear and vibration. Here are optical comparators, measuring machines, and also special equipment designed and developed right in the laboratory.

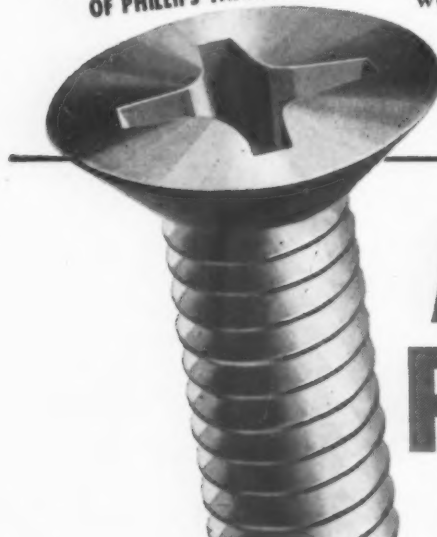
This is the "Information Center" on any fastening problem. And from it you will get engineered, metallurgical advantages *over and above* the basic advantages of American Phillips Screws... ease and speed of handling... self-aligned power driving... protection against burred heads and slashed work-surfaces. So write today, free of obligation, to:

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Chicago 11: 589 E. Illinois St.

Detroit 2: 502 Stephenson Bldg.

4-WINGED DRIVER CAN'T SLIP OUT
OF PHILLIPS TAPERED RECESS



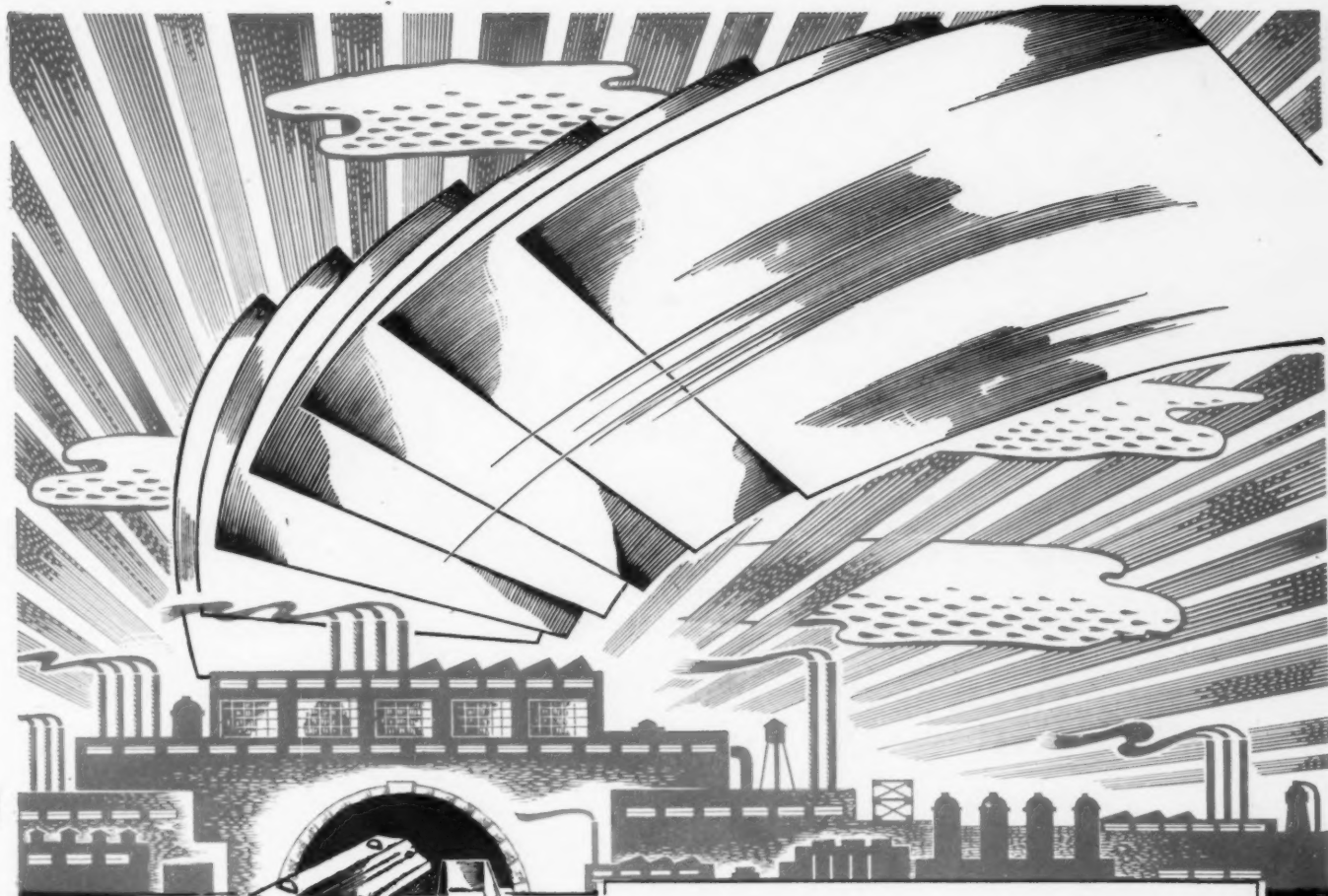
Technician
testing ten-
sile strength
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Phillips Screws.

AMERICAN PHILLIPS *Screws*

SOLD THROUGH INDUSTRIAL SUPPLY DISTRIBUTORS



ALL TYPES
ALL METALS: Steel,
Brass, Commercial
Bronze, Stainless
Steel, Aluminum,
Monel, Everdur (sili-
con bronze)



SHEET-STEEL

**PROCUREMENT Facilitated
by Caine's Specialized Service**



One of Caine's important specialized warehouse services is that offered on sheet steel. Once again the benefits of specialization reflect themselves not only in the quality of the steel delivered, but also in the greater flexibility of the service offered. This service has been tuned to the needs of small as well as large users. Special shearing and slitting equipment enables you to secure special or exact sizes as readily as standard size sheets.

Some of the grades carried regularly in stock are: Hot Rolled, Cold Rolled, Galvanized, Enameling, Long Ternes, Uniform Blue, and Stainless.

Caine Specialized Warehouse Service is worth investigation. Contact the nearest Caine Warehouse or Office. They are located throughout the country for your convenience and profit.

CAINE *Steel Company*
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WAREHOUSES at Chicago, St. Louis, Minneapolis, Los Angeles, Oakland • OFFICES at Kansas City, Mo. and Grand Rapids, Mich.

if you now
wrap your
product in paper



A bag may do your job better at lower cost

Yes, if you now wrap your product in paper, you may be wasting valuable time, material and labor in your packaging department that could be saved if you used *special paper bags*. The Bemis

Paper Bag Specialty Division is giving manufacturers important savings by developing bags and methods of packing a wide range of products formerly hand-wrapped in paper.

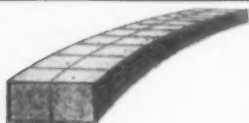
TREES • CANS • FIREBRICK AND PERHAPS YOUR PRODUCT



A waterproof paper bag saves time, materials and labor in wrapping trees. Trees ready for shipment are usually wrapped in paper. Now they may be slipped into special paper bags supplied by Bemis. Time and labor is saved, and the bag makes a better looking package.



4' x 12' sheets of wallboard are usually wrapped in heavy paper. A large paper bag has been designed to hold six sheets. This gives savings in labor and materials; frees valuable floor space in the packing department.



100-pound cubes of firebrick clay are unwieldy and hard to wrap in paper. A special paper bag speeds up handling and provides a more efficient protective covering.

SUBMIT YOUR PACKAGING PROBLEMS TO BEMIS

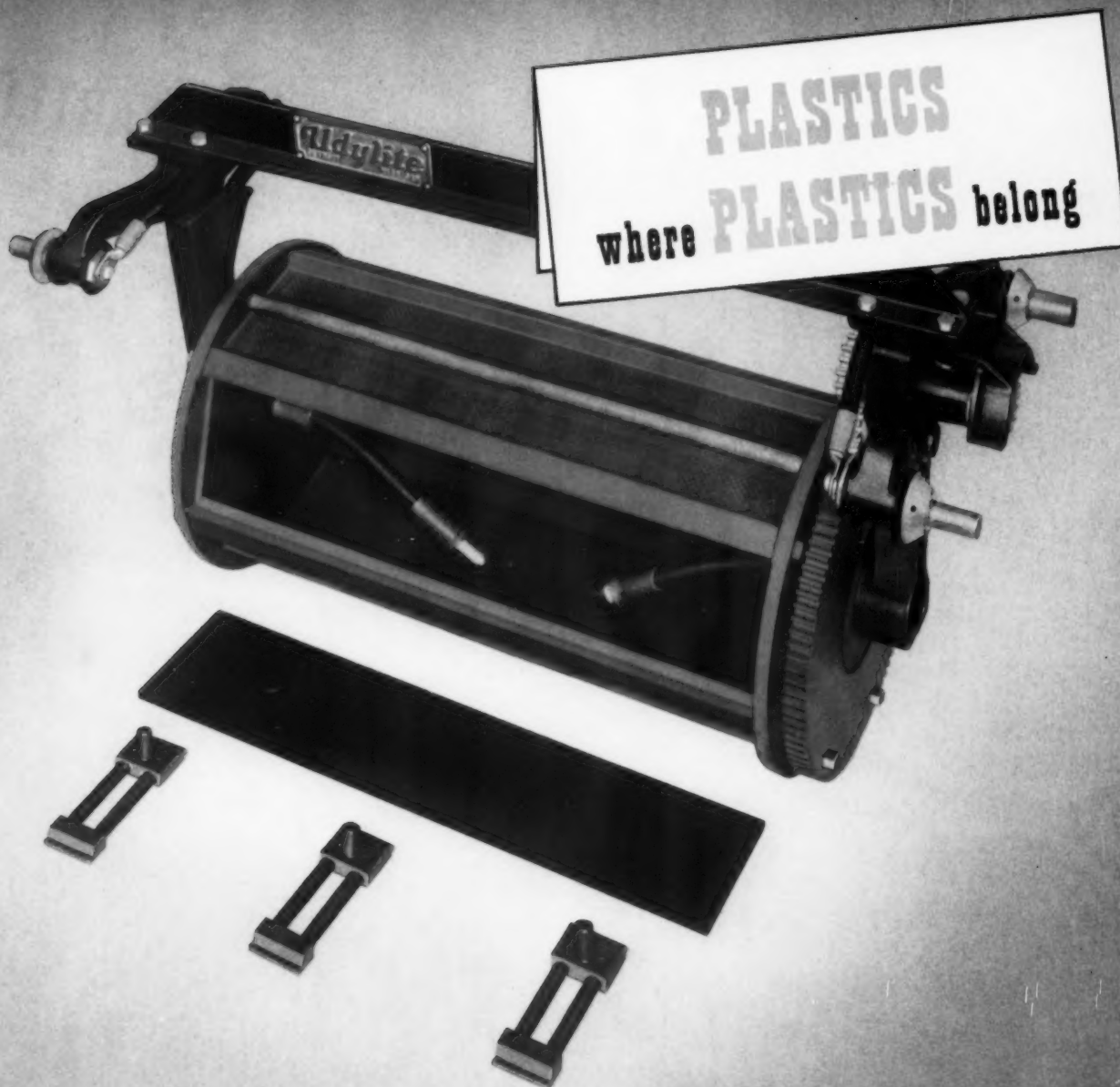
No matter what type or size of product you make, if you now hand-wrap in paper you may find new packaging economy in a *special paper bag*. Call Bemis today. There is no obligation.

BEMIS BRO. BAG CO.

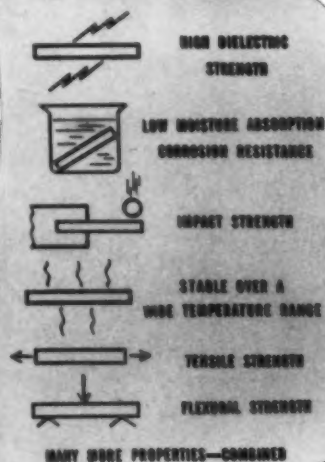


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St. Louis, Missouri



Using Resistance to Chemicals and Wear



THIS IS A *Plating Barrel*. And you might look a long while before finding a more appropriate application of plastics.

Several kinds of plating barrels are made of Synthane *laminated* plastics. Which is understandable because Synthane opposes the inroads of a variety of corrosive plating solutions, resists punishment from tumbling pieces.

Synthane has many more good properties and an army of practical uses . . . electrically, chemically, mechanically. If you've a place for this versatile material, let us pitch in and help you . . . with the right design, the right plastics for the job . . . the right men and equipment for economical fabrication. Write for our complete catalog of Synthane Plastics today.

SYNTHANE CORPORATION • 7 RIVER ROAD • OAKS • PENNSYLVANIA

SYNTHANE
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SYNTHANE TECHNICAL PLASTICS • DESIGN • MATERIALS • FABRICATION • SHEETS • RODS • TUBES • FABRICATED PARTS • MOLDED-MACERATED • MOLDED-LAMINATED

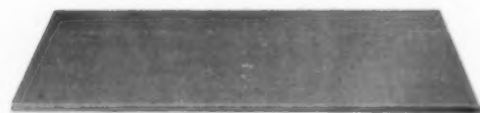


THE *Egyptians* STARTED IT

THE *Romans* HAD A WORD* FOR IT



GRANDPA SAT ON IT



You HAVE A USE FOR THIS MODERN VERSION

Our type of plastics—laminated phenolics—is exactly what its name implies—made by applying heat and pressure to layers or *laminae of paper, fabric or other materials impregnated with heat-reactive resins.

The Egyptians were probably the first to discover the principles of laminating, using thin overlayers of wood chiefly for beauty. Later, however, thin sheets of wood were bonded for economy and strength as well.

Now, in laminated phenolics such as Synthane, you

have in a single non-metallic material an excellent dielectric, resistance to corrosion from many chemicals, oils, waters, and atmospheres, mechanical strength, light weight (½ the weight of aluminum), ease of machining, and many more useful properties.

If you have not yet fully investigated the "laminates", or through military service have been out of touch with their uses, write in for a copy of the complete Synthane catalog today.



GET THIS GUIDE TO SYNTHANE

SYNTHANE

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PLAN YOUR PRESENT AND FUTURE WITH SYNTHANE
TECHNICAL PLASTICS • SHEETS • RODS • TUBES • FABRICATED
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Please send me without obligation the complete catalog of Synthane technical plastics.

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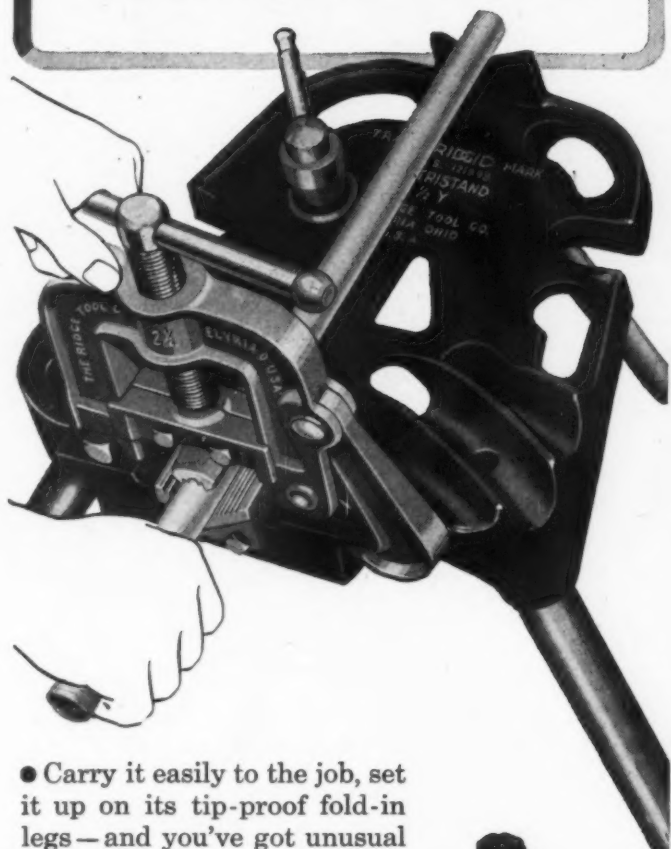
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TRISTAND

**gives you a smart
vise and handy work-
bench all in one...**



● Carry it easily to the job, set it up on its tip-proof fold-in legs—and you've got unusual working convenience. Roomy tray for dope pot, oil can, handy slots for tools, a pipe rest to make cutting or threading easier, 3 benders that won't dent pipe—and either yoke or chain vise with LonGrip jaws that hold pipe firmly without scratching. More for your money; ask your Supply House for **RIDGID** Tristands.



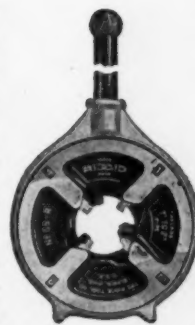
**You cut perfect 1" to
2" pipe threads with
least effort with
Precision-built, Self-contained**

RIDGID

No. 65 R



● If you've never used this remarkable steel-and-malleable No. 65R die stock, you have a pleasant surprise coming. Workholder sets to pipe size instantly, no bushings to fool with—dies adjust to 1," 1¼," 1½" or 2" pipe in 10 seconds! With least possible effort the high-speed steel chasers cut smooth perfect threads on any pipe. It's precision quality in every part. For performance and long life... for surprisingly easy threading... buy the **RIDGID** 65R at your Supply House.



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stands up handily
on the floor.

Millions of **RIDGID**
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WORK-SAVER PIPE TOOLS

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DIVISION

CAN COMPANY, INC.

PAPER DIVISION Headquarters
330 W. 42d St., New York 18, N. Y.

COMBINATION PAPER AND METAL CONTAINERS

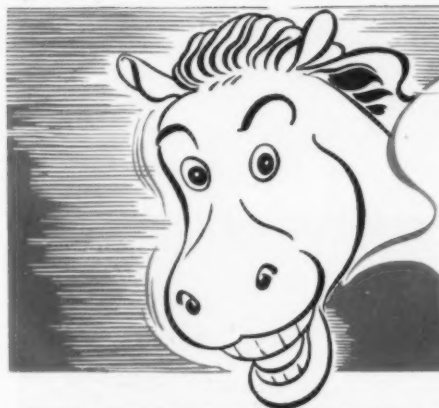
LIQUID-TIGHT FOOD CONTAINERS

MONO PAPER CUPS

FIBRE DRUMS The Container Co., Van Wert, Ohio

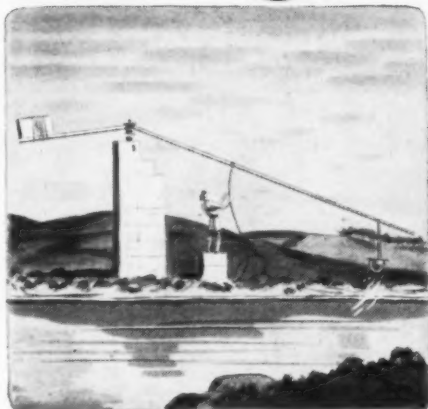
Sales offices in all principal cities

AND CONTINENTAL is a big family—growing bigger—manufacturing many different kinds of paper packages for food and dairy products . . . liquid-tight containers, cups, fibre cans and drums . . . all in a wide variety of types and sizes. Wherever you see the Continental Triple-C trade mark on a paper container—you know you're getting the best in *quality*, best in *service*.



Old Reliable Red Band Says—

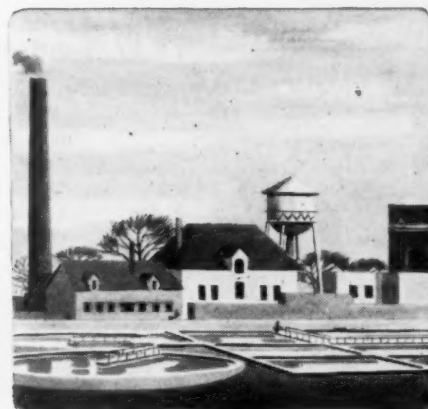
*"It all started with
a Bucket Brigade!"**



1 **Earliest recorded** mechanical water-works system was known as the "Shadoof." Water was scooped for the Pharaohs' water supply out of the Nile. . . . Relays of slaves worked chains of buckets, day and night. . . . In 1485 B.C., the exiled brother of Rameses II took this method to Greece.



2 **As early as 300 B.C.**, miles of crude, hand-made aqueducts were carrying water from Alpine springs to Rome, where matrons filled household water jars at public fountains in the streets. . . . Early American colonists dug community wells—built cisterns to catch rain water.



3 **Today**, electrical horsepower from thousands of industrial type motors pump water for public requirements and industry—pump fluids for industrial processes. . . . Howell has specialized in building motors for pumps and other industrial needs for more than 30 years.

Have you a hard job for Horsepower?

Howell Motors are better than ever today. The reasons: Years of experience in building industrial type motors to meet the exacting requirements of the automotive, machine tool, dairy, food and other important industries.

Howell Motors are quality-motors. They are smooth-operating because they are statically and dynamically balanced. They are better performing because they are built of the finest materials—copper or bronze rotors—and completely

insulated. They are trouble-free on the job because they are designed for the toughest tasks in industry—consequently, they perform better on all jobs.

For your needs, in specialized or standard motors, phone the nearest Howell Representative. Remember, you pay no more for industrial type Howell Motors . . . but you always get top quality for your money.

**Another historic story by Old Reliable Red Band*



Howell Protected Type Motors available in sizes 5 h.p. and smaller. Also other sizes of Howell industrial type motors available up to 150 h.p.



HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Manufacturers of Quality Industrial Type Motors Since 1915

*This fact has a
definite reason behind it*

**Your GATES VULCO ROPES
Are Today Making Performance Records
NEVER EQUALED by ANY V-Belts Before!**

No V-Belts built by *anyone* before the war had anywhere near the strength and durability that was found necessary on U. S. Army tanks, tractors and self-propelled big guns during the war. Gates developed these greatly superior V-belts for Army use—and here is why this fact is important to industrial users of V-belts: —

*Here is
the reason*

Every improvement developed by Gates for U. S. Combat Units—and many later improvements, also—have been added, day by day, to the quality of the Standard Gates Vulco Ropes which have been delivered to you.

That is why, *long before the war was over*, you were getting in your Standard Gates Vulco Ropes a product built to far higher service standards than any V-belts ever built by anyone before the war.

And that is not all of the story. Through continuing *specialized* research, the service qualities of these superior Gates Vulco Ropes have been still further improved as all of Gates facilities and energies have been returned to the service of industry.

These are the simple reasons why you are finding that your Gates Vulco Ropes are today outperforming any V-Belts you ever used before.

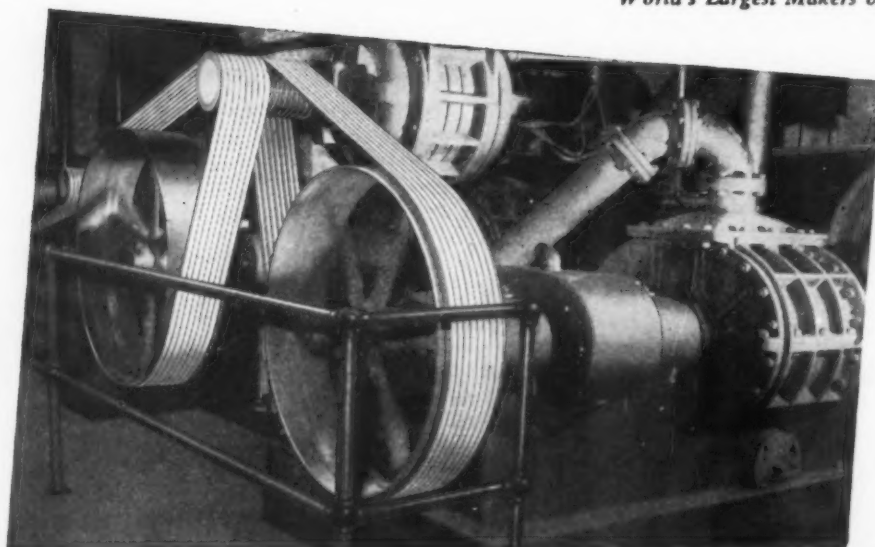
THE GATES RUBBER COMPANY
DENVER, U. S. A.

World's Largest Makers of V-Belts

All Gates
V-Belts are
Built With
The Patented



THE MARK OF SPECIALIZED RESEARCH



GATES VULCO ROPE DRIVES

Engineering Offices
and Jobber Stocks

IN ALL INDUSTRIAL CENTERS of the U. S. and
71 Foreign Countries

Scovill

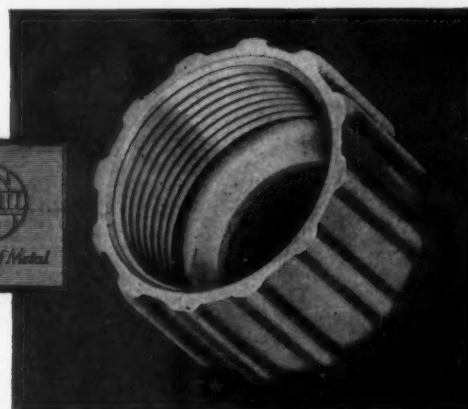
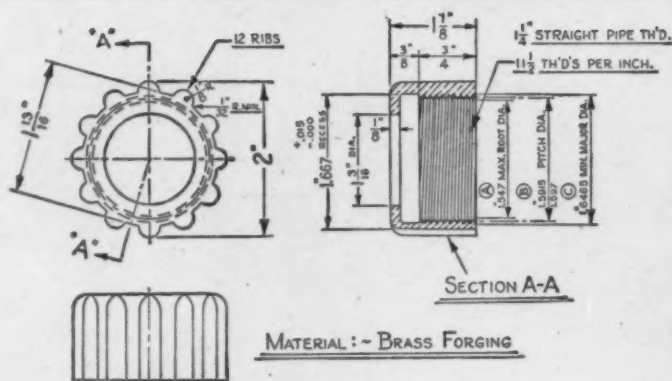
NON-FERROUS

FORGINGS

*When SCOVILL becomes
your METAL-PARTner...*
**MACHINED FORGINGS AT LOWER COST
THAN BY PRESENT PRODUCTION METHODS
MAY BE POSSIBLE**

Originally, this brass packing nut was a screw machine item, requiring 1168 lbs. of special shape rod per thousand pieces. By changing to forging, Scovill cut down the amount of metal to 619 lbs. per thousand — a two-way saving, because of the lower cost of the forging rod.

But Scovill economy is concerned not only with savings in materials. Our modern machining equipment also saves time in the production of forgings. The net over-all saving in this particular case was about 75 per cent.



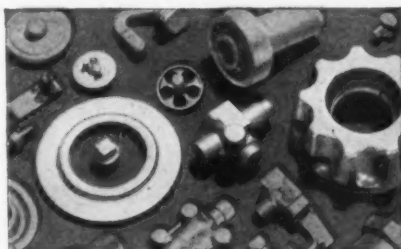
Are you completely satisfied with the brass, aluminum or other non-ferrous metal parts you're now using? If you think there's room for improvement in their design, quality or cost, it would be a smart move to put your problems up to Scovill. Our long and varied experience in non-ferrous forgings has aided many manufacturers by providing them with either better products or lower costs. Let us put that experience to work for you.

GET THE FACTS

We'll be glad to send full details on how you can benefit by making Scovill

your METAL-PARTner. Just fill in the coupon below and mail it today.

Scovill Manufacturing Company,
Waterbury 91, Conn. Export Department:
405 Lexington Ave., New York 17, N. Y.



Please send me information about your metal-working facilities. I am interested in non-ferrous forgings for the applications checked:

- ☐ Aircraft
- ☐ Automobiles
- ☐ Band Instruments
- ☐ Blow Torches
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- ☐ Communication Equipment
- ☐ Compressed Gas Cylinders

- ☐ Fire Extinguishers
- ☐ Household Appliances
- ☐ Industrial Instruments
- ☐ Plumbing Goods
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- ☐ Welding Equipment

Other applications.....

SCOVILL MANUFACTURING COMPANY

Forgings Division
21 Mill Street
Waterbury 91, Connecticut

Name

Company

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LONGER GAGE LIFE...
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5-PLUS FEATURES

- 1** Greater accuracy and stability
- 2** Longer wear life
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ACCURACY YOU CAN TRUST

WOODWORTH THREAD RING GAGE PROVES AMAZING SUPERIORITY OVER ORDINARY GAGES

Records for durability . . . for accuracy . . . for economy! They're being established regularly with the new Woodworth Adjustable Thread Ring Gage.

AUTHENTIC SHOP ACCOUNTS TELL OF MAINTAINING ACCURATE INSPECTION AS MUCH AS TWELVE AND ONE-HALF TIMES LONGER THAN ANY OTHER RING GAGE—AND ALL THIS ON EXTRA-TOUGH JOBS. CHECK THIS RECORD AGAINST YOUR EXPERIENCE . . . CONSIDER WHAT IT CAN MEAN IN CUTTING GAGE COSTS!

Then wire or write for our folder No. 46R.

WOODWORTH

N. A. WOODWORTH CO., SALES DIVISION, 1300 E. NINE MILE ROAD • DETROIT 20, MICHIGAN
 PRECISION GAGES • PRECISION MACHINE PARTS • DIAPHRAGM CHUCKS • ADJUSTABLE CLAMPING JIGS • SPECIAL TOOLS

They give steel a "physical" before it is born!

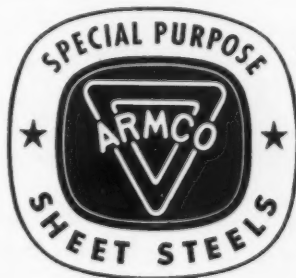


Before raw materials go into the open-hearth furnaces, all mill-orders for Armco sheet steels are given a complete Q.C.—(Quality Control) analysis. The steel must be *right*, physically and otherwise.

What kind of steel is needed? How much annealing? What special drawing or welding qualities does it need for the customer's requirements?

These and other questions are studied in the Armco laboratories. Answers are recorded on a routing card that accompanies your order of Armco steel all the way—from open-hearth furnace to shipping platform.

Data and instructions on this individual routing card represent the composite judgment of your engineers, and our metallurgists, chemists and operating men. It is the result of information you give our sales and mill representatives, and the blueprints you supply; of experience with previous orders or similar applications.



PRESCRIPTION: "Q.C."

Armco's mill supervisors call this prescription "Q.C."—Quality Control.

It all adds up to this: You get the *one right steel* for the products you make—and those who buy your products or equipment get full material value from their purchase.

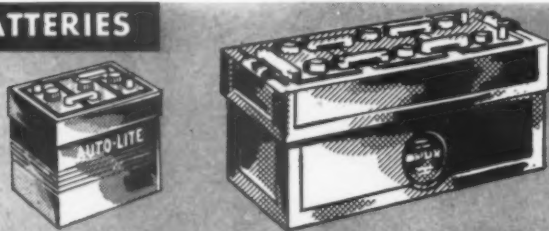
This is why Armco is the leading producer of special-purpose sheet steels. Research, experience, advanced methods all contribute to "Quality Control" at our end and better quality at yours. The American Rolling Mill Co., 2611 Curtis St., Middletown, O.

Export: The Armco International Corporation

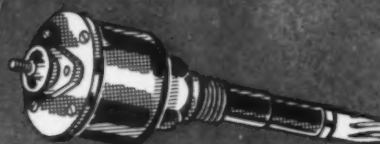
THE AMERICAN ROLLING MILL COMPANY

AUTO-LITE

BATTERIES



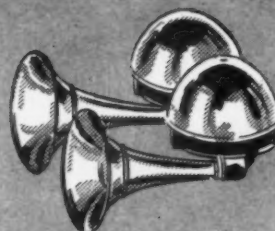
GOVERNORS



BUMPERS



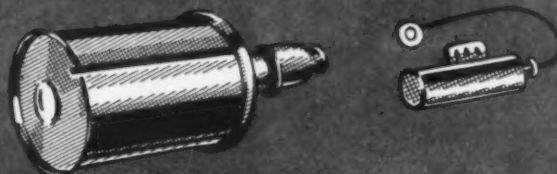
HORNS



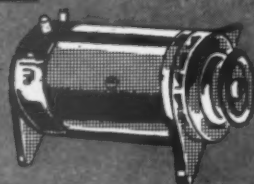
MOTORS



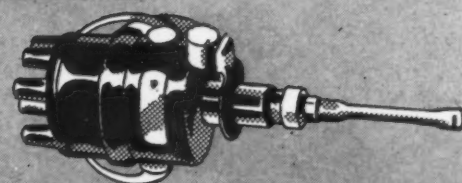
COILS & CONDENSERS



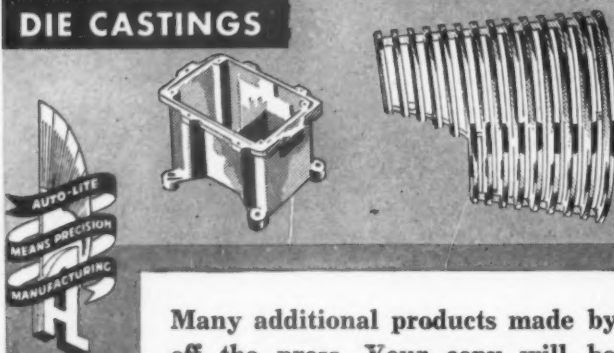
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DISTRIBUTORS



DIE CASTINGS



METALS



Many additional products made by Auto-Lite are listed in a new booklet just off the press. Your copy will be mailed on request. Auto-Lite's extensive resources and 26 great plants are widely used by industry generally.

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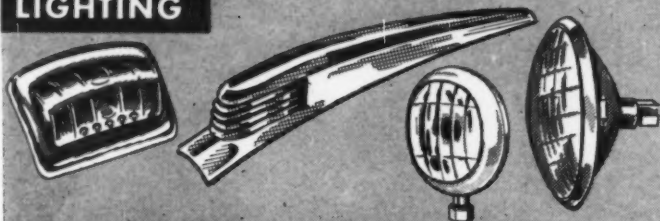
REGULATORS & RELAYS



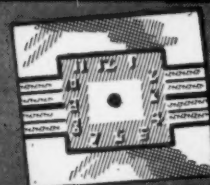
PLASTICS & METALS



LIGHTING



ORNAMENTATION OF METALS



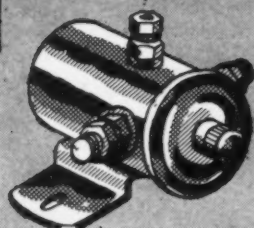
AVIATION SPARK PLUGS



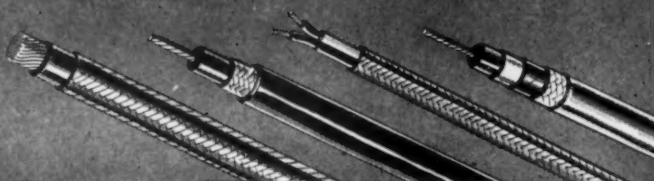
SPARK PLUGS



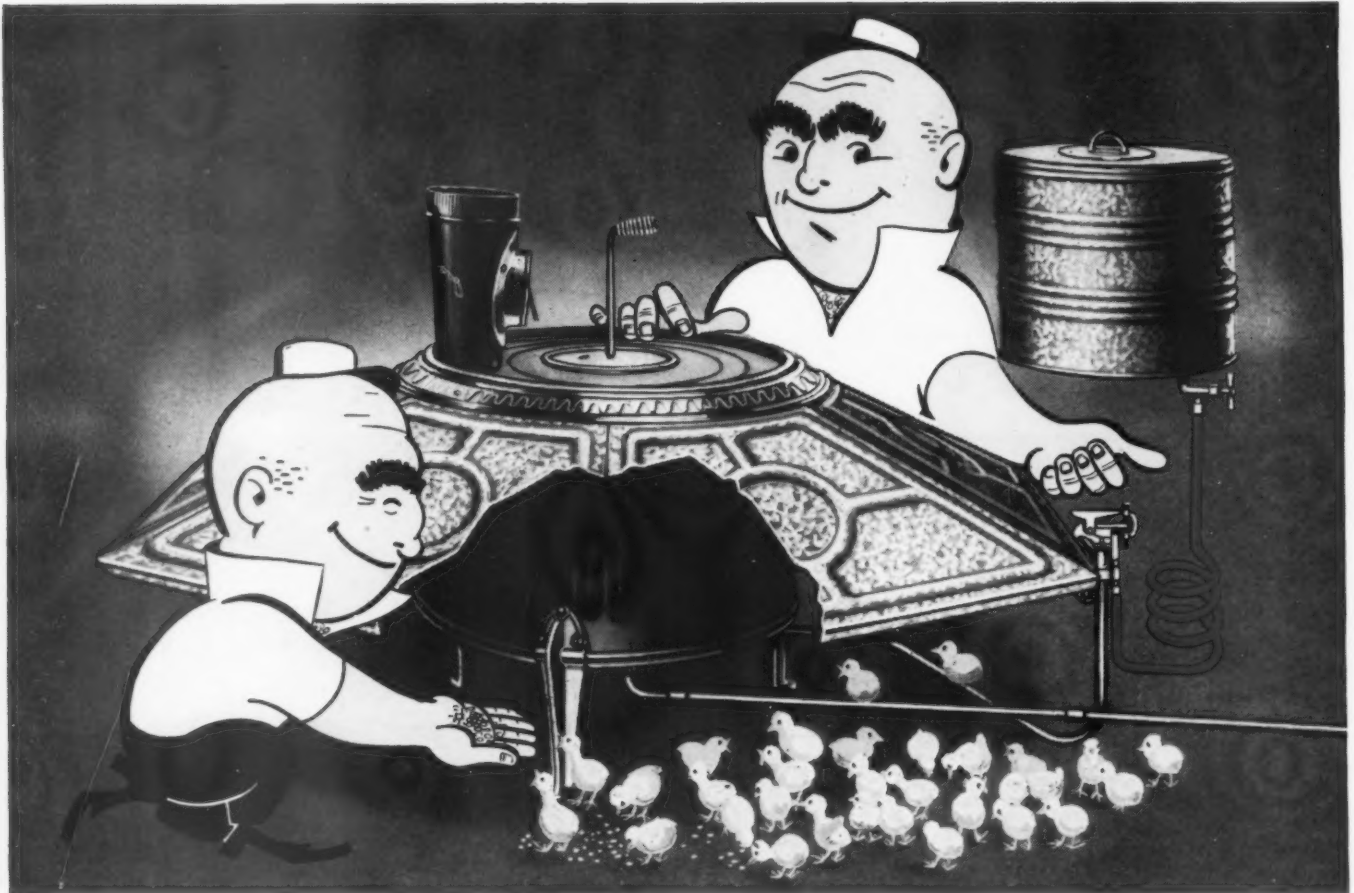
SWITCHES



WIRE & CABLE

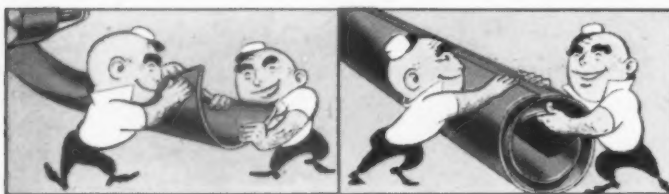


THE ELECTRIC AUTO-LITE COMPANY
SARNIA, ONTARIO **TOLEDO 1, OHIO**
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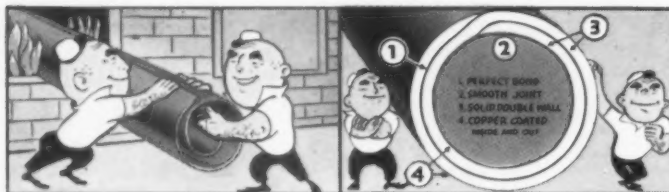
For men who won't buy a "Pig in a Poke"

BUNDYWELD TUBING SUPERIORITY STEMS FROM AN EXCLUSIVE AND UNIQUE MANUFACTURING PROCESS



1 Bundyweld Tubing is made by a process entirely different from that used in making other tubing. A single strip of copper-coated S.A.E. 1010 steel is continuously rolled twice laterally . . .

2 . . . into tubular form. Walls of uniform thickness and concentricity are assured by the use of close tolerance cold rolled strip. This double rolled strip passes through a furnace where the . . .



3 . . . copper coating fuses and alloys with the double steel walls. After brazing and cooling, it becomes a solid double wall steel tube, copper brazed throughout 360° of wall contact . . .

4 . . . copper coated inside and out, free from scale, closely held to dimensions. Hard or annealed in standard sizes up to 5/8" O.D. Special sizes cold drawn. Also in Monel, nickel and nickel alloys.

OUR DESIGN engineers like to meet manufacturers who insist on knowing what they're buying—*before they buy it*. Here's why: Our men can *prove* that Bundyweld Tubing is *superior . . . different*.

In hundreds of exacting applications, Bundyweld is providing outstanding service to modern industry—condensers for refrigerators . . . flash tubes, pilot tubes and supply lines for gas ranges . . . fuel, lubrication and hydraulic lines for motor vehicles . . . even in such little known applications as chicken brooders. In any case, Bundyweld users can count on:

- great resistance to vibration fatigue
- high bursting point in pressure applications
- great strength
- easy fabrication
- low cost

No matter what use you make of tubing, the odds are with Bundyweld for giving you better service at lower cost. Write today. *Bundy Tubing Company, Detroit 13, Michigan.*

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Rutan & Co.
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Eagle Metals Co.
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Cork-and-Synthetic-Rubber Gaskets

These truly compressible seals meet widely varied requirements

WHEN your engineers call for a sealing material with a specified degree of true compressibility, you can meet their needs with one of Armstrong's Cork-and-Synthetic-Rubber Compositions. By combining cork with the various synthetic rubbers, Armstrong produces a range of standardized materials in which side flow is either held within stated limits or virtually eliminated.

In addition to controlled compressibility, these compositions offer lasting resilience and imperviousness to most liquids and gases. Their unique combination of physical properties provides the right answer for hundreds of applications where other types of gasket materials fail.

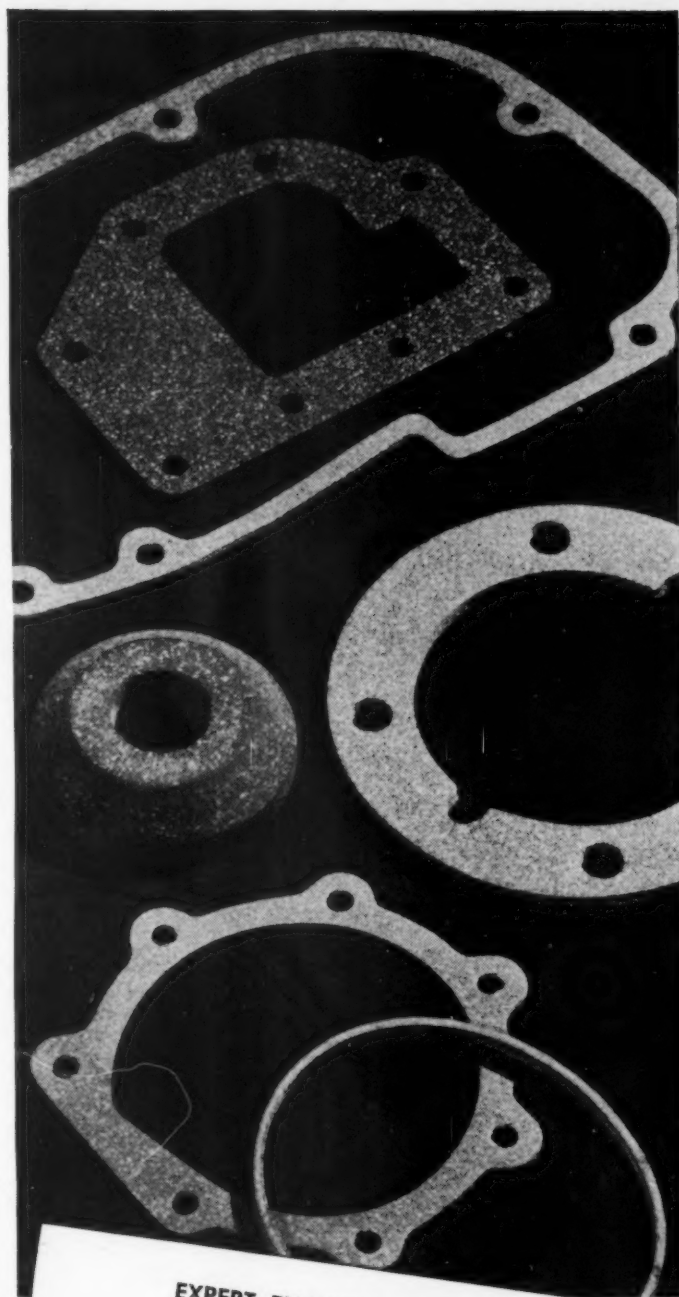
Typical applications of Armstrong's Cork-and-Synthetic-Rubber Compositions include not only gaskets, but also valve discs, cylinder sleeve rings, sealing tapes, feed rolls, and many others.

For same-day service on special die-cut gaskets, consult your near-by gasket cutter. Many leading cutters stock Armstrong's specialized sealing materials. Specify "Armstrong's" when you order.

For specification data, send today for your free copy of "Gaskets, Packings, and Seals." Address Armstrong Cork Company, Gaskets and Packings Department, 7207 Arch Street, Lancaster, Pennsylvania.



ARMSTRONG'S INDUSTRIAL PRODUCTS: GASKETS, PACKINGS, SEALS, and MECHANICAL SPECIALTIES of Cork, Synthetic Rubber Compounds, Cork-and-Synthetic-Rubber Compositions, Cork-and-Natural-Rubber Compositions, Fiber-Type Materials, and Rag Felt Papers • RESILIENT SURFACINGS for desks, bars, counters, etc. • FLOORINGS for buses, railway cars, etc. • TEXTILE MILL SUPPLIES • SHOE MATERIALS • ADHESIVES • GLASS INSULATORS.



EXPERT ENGINEERING SERVICE ON YOUR GASKET PROBLEMS

If you have a specialized sealing problem, call in your Armstrong Gasket Engineer. He will give you expert, unbiased technical advice, backed by Armstrong's years of experience solving a wide range of sealing problems. An Armstrong office is conveniently located near you. Call, write, or wire today. No obligation, of course.

**ARMSTRONG'S
GASKETS • PACKINGS
AND SEALS**



HOME CONSCIOUS?..

From sweaters and knit goods to hats and hosiery, the next few years are going to be big years in textiles. Silks and rayons, cottons and linens, nylons and wools, are all bidding for part of the five billion dollar national market*. More and more of these manufacturers — 190 million in the sweater and knit goods branches alone — are turning to home conscious set-up boxes. Individual packaging instead of bulk packaging, new machinery, adequate labor supply and financial adjustments will soon make possible the expected ten percent increase in textile sales. Manufacturers of home conscious textiles can realize their share of the ten percent increase, thanks to set-up boxes with their added strength, economy and shipping convenience, taking your message home with the product.

* For a host of other facts and figures, write or call your nearest paper box manufacturer for survey No. (58) "Textile Industries" or "Sweaters and Knitted Goods Industry".

NATIONAL PAPER BOX MANUFACTURERS
Association

AND COOPERATING SUPPLIERS

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FOR INFORMATION OR SERVICE • CONSULT YOUR NEAREST SET-UP BOX MANUFACTURER

Purchasing Previews



A Washington Report for Purchasing Agents

July 1, 1946.

PREWAR DOLLAR NOT TO COME BACK . . .

Advance in the prices of basic industrial material is of important significance to purchasing agents. The increases in price of steel, copper and lead—materials which are slow to fluctuate in price markets—will constitute a prop to the cheap money, high-cost postwar economy.

Immediate cause of the price increases was the higher wages forced by labor through the series of strikes in controlling industries.

Actually, the higher price factors have been piling up for a period of time—and have been obscured by the large volume of production, and low sales costs of a war economy. Another important factor which has tended to submerge the mounting costs has been the Government subsidy programs which have guaranteed a profit for so-called marginal high-cost non-ferrous mines.

The present choice was between extending subsidy payments to all non-ferrous mines, or increasing the prices of basic metals to a point where the volume producers were guaranteed a profit margin. If the subsidy course were adopted, it would be conclusive evidence that the Government considered it possible to return to the prewar dollar.

The decision, however, was to increase prices sufficiently to insure the bulk of production at a profit. The so-called high cost producers still will get subsidy payments, but here it is understood that when demands slacken these producers will shut down.

SURPLUS LIQUIDATION PLANS . . .

War Assets Administration is banking heavily on "site sales" to liquidate war surpluses.

Objective is to sell quickly—to clear out and get from under the billions of dollars worth of accumulated surpluses. To liquidate, the Government has adopted a policy of going direct to the buyer—whether the buyer be an industrial user, a merchandiser, or an ultimate consumer.

On conventional type items, the returns to the Government from the site sales have been fairly high. On new items, the Government is realizing approximately 70% of acquisition cost—on used items, approximately 60%.

The consumer gains in that he gets this considerable discount from the Government's original purchase price, plus the fact that current reproduction costs of the items purchased would be considerably higher than original purchase due to the general advance in prices.

Several site sales have been staged on an experimental basis—and these will serve as a guide for between 1,000 to 5,000 such sales which will be held in various sections of the country under the WAA plans.

MECHANICS OF SITE SALES . . .

"Site sale" procedures have been worked out to simplify the buyer's problems.

In an idealized case, which the War Assets Administration hopes to make typical, the buyer arrives at the site where the sale is being held, and finds a parking place for his car and his way to the sales office by following signs which make it impossible to get lost.

The buyer goes into a sample room, where he is given a catalogue and order blanks. He wanders among the samples where clerks are on hand to answer questions, and to "keep the crowd moving."

When the buyer has completed his order, he takes it to a counter where it is reviewed by the sales clerk to see whether he has filled it out completely. The buyer then signs the order, and it is passed on to an order register clerk who gives it a serial number. The buyer receives a duplicate copy of his order, and is asked to step into a waiting room.

While the buyer is waiting—and the total process is supposed to take a maximum of 27 minutes—the original order blank passes along to inventory clerks who keep a perpetual card system.

When the order is verified against remaining quantities of goods, a clerk writes up a final six part sales document. Three copies are passed along to the cashier, and the buyer steps up and either pays in cash or arranges credit. The buyer gets three copies of the bill of sale—one for his invoice, the others for delivery to the traffic representative of the Government agency which owns the surplus material that he has purchased, so that they can make delivery.

SELLER'S MARKET CONTINUES STRONG. . . .

There has been increasing discussion of the dangers of industry pricing itself out of the market for large volume of sales.

While this concern is premature, it is significant that an all-time high in production has already been reached in output of tires, men's suits, vacuum cleaners, electric irons and washing machines.

Another straw in the wind is the heavier bite which consumers are making into their savings.

At the same time, the wage increases which have been given labor in basic industries, and which will be mirrored in the wage scales of all industry, tend to buoy up the purchasing power of the consumer.

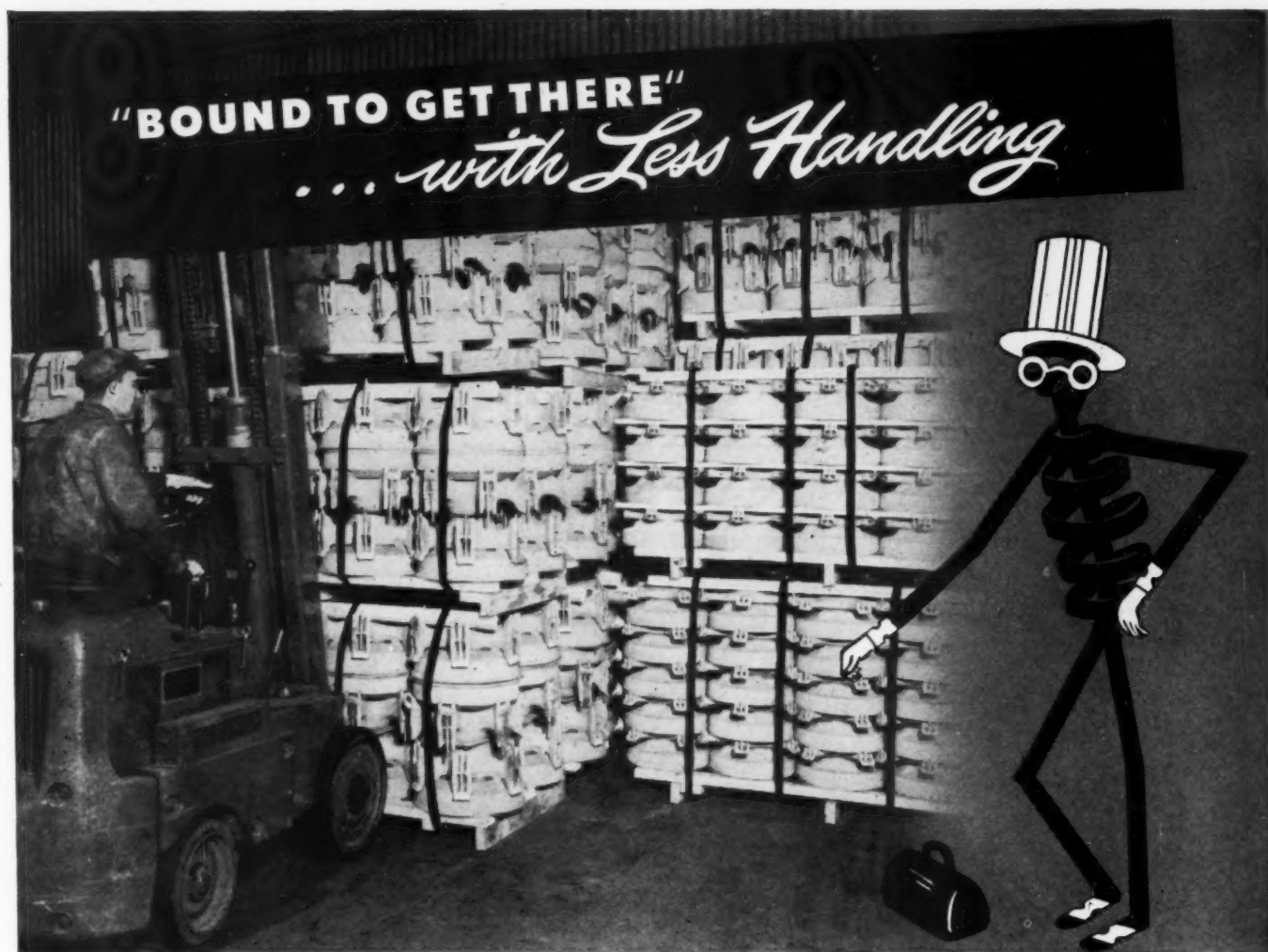
The general speculation is that for the remainder of the year, the strong sellers' market will continue, and it is believed that this fall and winter will see an unprecedented retail sales volume—with merchandisers beginning to exercise a measure of caution price-wise in replacing what is likely to be a Christmas sell-out.

COMPETITION IN STORE FOR CRUDE RUBBER . . .

Department of Commerce reports that as an immediate outlook, the demand for natural rubber exceeds supply, but that before very long the position of crude will be determined by price and considerations of national security.

The price of GR-S, the general purpose synthetic rubber, is currently 4 cents a pound less than that of crude rubber, but the crude product is considered more desirable on account of quality and ease of processing.

On a long-term basis, however, the price of natural rubber will have to compete with the synthetic product. The Department of Commerce sees the possibility that the crude rubber producers will have to introduce drastic economies, such as confining production to high yield trees, and the concentration of managements and financial structures of rubber estates.



ACME *Uni-Pak*...

Just what its name implies, several packages tied into one by Acme Steelstrap. The modern method of shipping a group of packages, semi-finished parts, or finished products . . . with less handling.

Illustrated above is a case in point. One man, a lift truck, and Acme Uni-Pak . . . the job is done in a fraction of the handling time required by cumbersome, old fashioned ways.

Yes, for complete shipping efficiency, for making safe shipments . . . ship Acme Uni-Pak with Acme Steelstrap. Look into this minimum handling method today.

Doc. Steelstrap REG. U. S. PAT. OFF.

15 MAN HOURS SAVED ON CARLOADS ACME UNI-PAK'D

A leading manufacturer and shipper says . . . "since using your Uni-Pak process, the time required by handling and loading car-lot shipments has been reduced the equivalent of 15 man hours per car. The number of cars loaded has speeded up accordingly."

NEW YORK 7

ATLANTA

CHICAGO 8

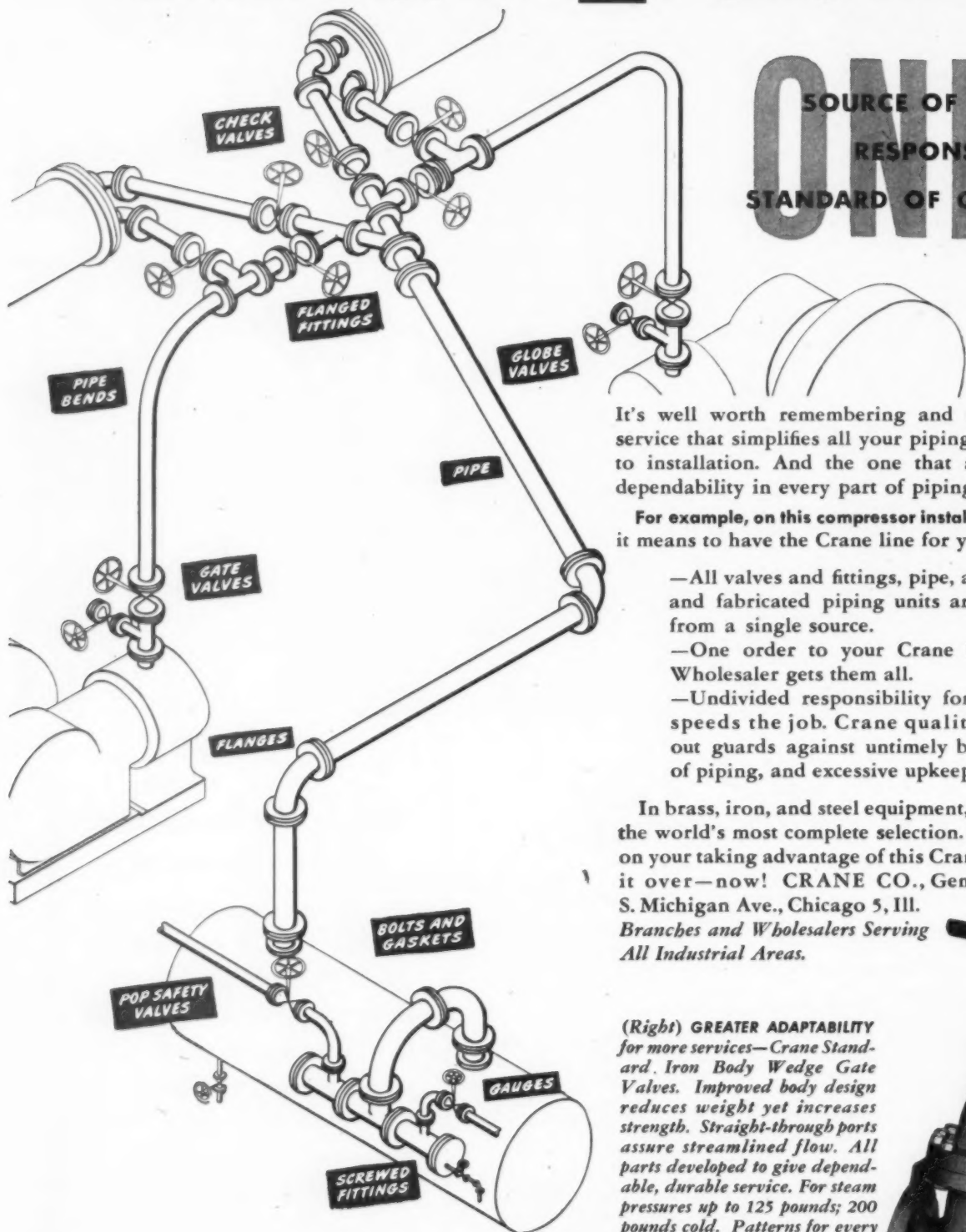
LOS ANGELES 11

ACME STEEL COMPANY

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WORTH REMEMBERING!...

CRANE Supplies all Piping Materials



ONE
SOURCE OF SUPPLY
RESPONSIBILITY
STANDARD OF QUALITY

It's well worth remembering and using now—the service that simplifies all your piping jobs from plan to installation. And the one that assures uniform dependability in every part of piping systems.

For example, on this compressor installation, look what it means to have the Crane line for your partner:

- All valves and fittings, pipe, accessories, and fabricated piping units are specified from a single source.
- One order to your Crane Branch or Wholesaler gets them all.
- Undivided responsibility for materials speeds the job. Crane quality throughout guards against untimely breakdowns of piping, and excessive upkeep.

In brass, iron, and steel equipment, Crane gives you the world's most complete selection. There's no limit on your taking advantage of this Crane service. Think it over—now! CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Ill. Branches and Wholesalers Serving All Industrial Areas.

(Right) GREATER ADAPTABILITY for more services—Crane Standard Iron Body Wedge Gate Valves. Improved body design reduces weight yet increases strength. Straight-through ports assure streamlined flow. All parts developed to give dependable, durable service. For steam pressures up to 125 pounds; 200 pounds cold. Patterns for every need. See Crane Catalog, page 101.



EVERYTHING FROM ...

VALVES • FITTINGS
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HEATING • PUMPS

CRANE

FOR EVERY PIPING SYSTEM



Orco HELPS FIGHT IT!

The above photograph of an airplane propeller blade was taken at 20,000 feet by a straboscopic camera synchronized with the RPM of the propellers.

Just 14 seconds before that photograph was taken, that propeller blade was coated with ice. What happened to the ice?

The propeller blades of the plane are equipped with the Safeway Propeller De-Icer, manufactured by Safeway Heat Elements, Inc., 320 Park Avenue, New York 22, New York.

The Safeway Propeller De-Icer consists of a woven electrical heating unit moulded between two sheets of neoprene, the outer layer having high abrasive resistance and the inner layer (bonded to the blade itself) having a high insulating quality to prevent the propeller heat from being absorbed by the metal blade.

The center section of the Safeway Propeller De-Icer

is so constructed that it delivers twice as much heat to the leading edge of the propeller blade (where ice forms) as to the remaining areas on either side of the middle section.

Mr. H. K. Stroud, President, Safeway Heat Elements, Inc., stated:

"The Ohio Rubber Company has done an excellent job of working out a satisfactory compound, both for the insulating layer and the abrasive layer. Also, they have done an excellent job of moulding by securing a smooth, thin surface without creases, or bubbles. Their solution of the technique of moulding our electrical inserts is of extreme importance in the satisfactory operation of these de-icers."

(That's another "sample" of ORCO-OPERATION in action on an obviously difficult assignment. Does it suggest that YOUR problems in rubber may be referred to ORCO for competent attention?)

THE OHIO RUBBER COMPANY

Orco-operation

WILLOUGHBY, OHIO

Factories: WILLOUGHBY, OHIO • LONG BEACH, CAL. • CONNEAUTVILLE, PA.

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Exceptional Quality **HIGH LEAD BEARINGS**
THAT COST LITTLE MORE THAN BEARINGS OF STANDARD ANALYSIS

FOR PRECISION airplane parts, pumps, seal rings, important high speed shafts, and in other places where bearing failure would involve critical delays, use Buckeye Lubrico Bearings. They combine a reduced coefficient of friction, excellent conformity to overcome slight shaft misalignment, qualities of self lubrication, good resistance against pounding, and the ability to withstand heavy shock without cracking.

Manufactured from selected metals under

Buckeye's exacting laboratory and metallurgical control, these bearings have uniform dispersion of lead throughout. They are free from porosity, and accurately dimensioned assuring speedy, easy assembly. Furnished in any of our 1088 stock sizes, or to customers ID, OD and length; slotted, drilled, flanged or threaded exactly to blue-print. Furnished in three different metal analyses, for light, general, and extremely heavy duty services. Let us quote on your requirements.

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**BRONZE SLEEVE BEARINGS • STANDARD SIZES OR TO CUSTOMERS' BLUEPRINT
 IN ANY RECOGNIZED BEARING METAL ANALYSIS**

COLGATE

**"ENGINEERED SERVICE,"
FACILITIES AND SKILL IN
Aluminum, Magnesium and Stainless Steel**



This precision fabricated assembly demonstrates COLGATE'S specialized "know-how," engineering ingenuity, and complete facilities for working with the light metals. Simple as it looks, the end use of this assembly necessitated the creation of positive tooling in order to attain the exact interchangeability required, as well as overcome the problems concerned with stamping, forming and welding operations — all of which were solved before mass production was started. This was accomplished by continuous "Engineered Service" conferences resulting in the saving of time, money and materials and the delivery of a quality product on time.

From the rough-idea stage to final assembly, COLGATE can help solve your problem of developing new products, improving old ones, substituting light metals for other materials. COLGATE can supply

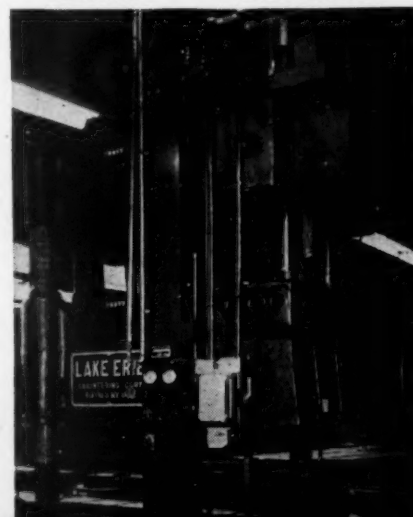
the "know-how" for special parts fabrication and assembly and in essence give you additional plant facilities without investment. COLGATE'S specialized experience, complete and centralized facilities, latest mass-production assembly techniques all contribute to meet your exacting specifications and delivery dates. Where blueprints are already prepared we will fabricate and assemble parts to your specifications.

Let COLGATE show you how these sales-creating product features — *light weight, increased strength, durability, added beauty and improved performance* can make light metals a desirable substitute for heavier materials. Learn how COLGATE'S "Engineered Service", facilities and skills can help make your product faster, better, more economically. Your Inquiry is invited, prompt attention and complete confidence assured.

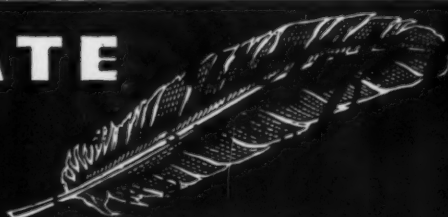
COLGATE has a variety of hydraulic presses ranging from 10 to 750 ton capacity and mechanical presses from 2½ to 200 tons capacity. Complete and centralized facilities for—

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FORMING
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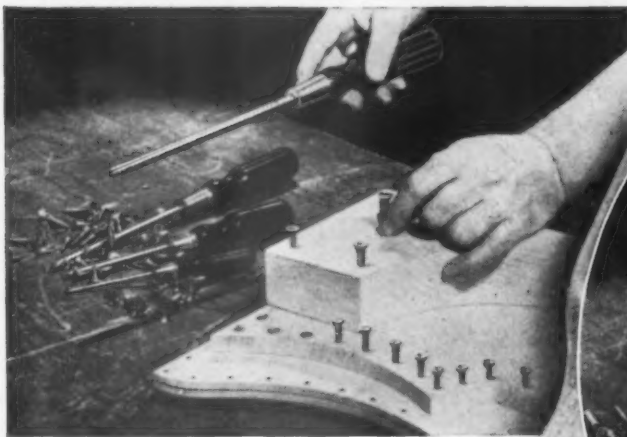
WELDING
FINISHING
ASSEMBLING



COLGATE



NOT 4 DRIVERS ...



MANUFACTURING

Recessed and Slotted
Wood Screws Sheet Metal Screws
Machine Screws Stove Bolts
Also
Cap Screws Set Screws
Machine Screw Nuts Wing Nuts
Rivets and Burrs Rods
Screw Drivers and Bits
Specialties

...but ONE!

Most styles of recessed head screws require as many as 4 different drivers for the entire size range of heads.

Reed & Prince Recessed Head screws require only ONE Reed & Prince driver to fit any style or the ENTIRE SIZE RANGE of heads!

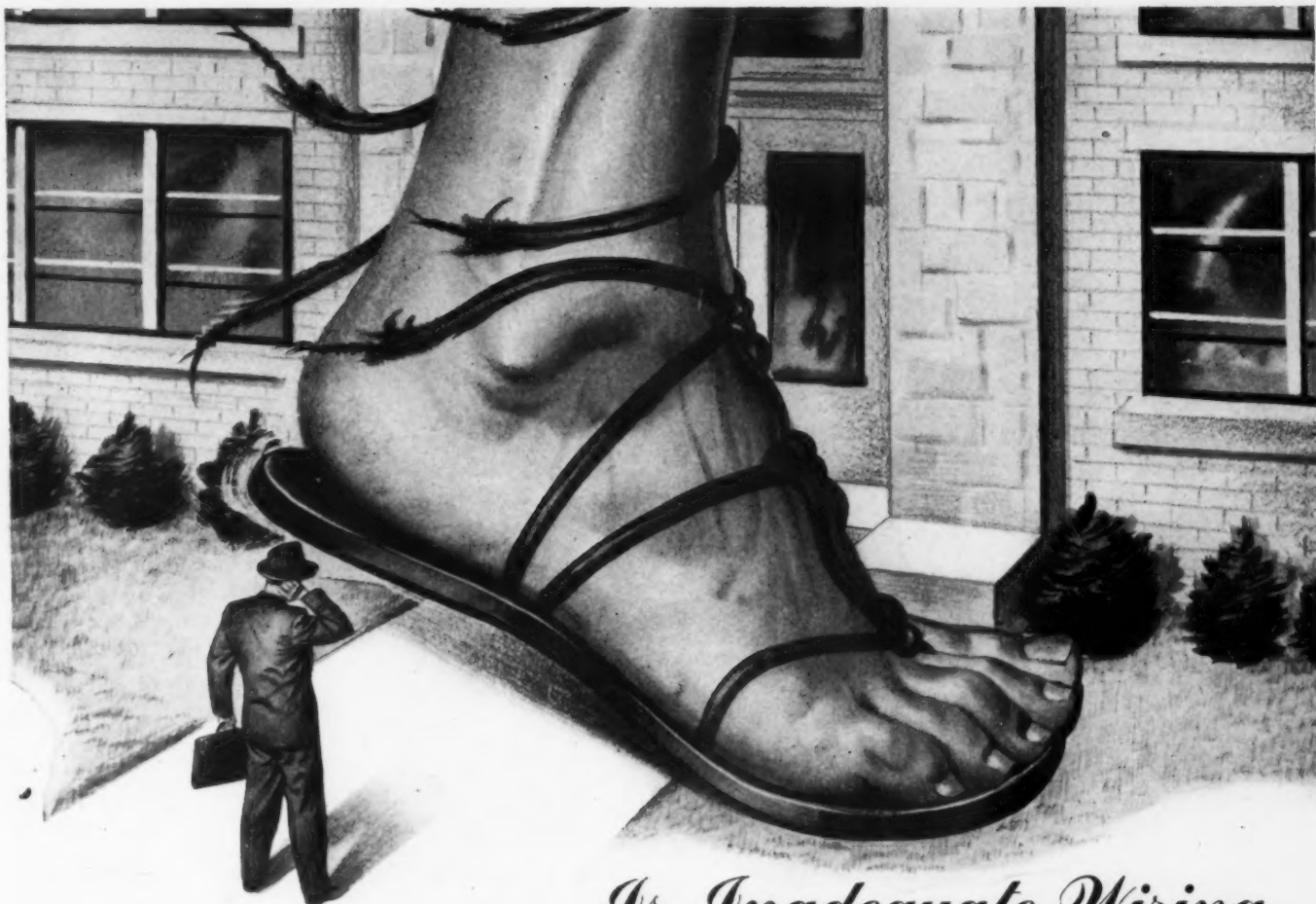
This means — no fumbling or false starts to find the right tool — less loss of time — less labor lag — faster production! Increased assembly speed is made possible by the Reed & Prince precision engineered recess — the driver or bit EXACTLY matches the recess — always drives with accuracy at full power! For your convenience Reed & Prince drivers are available in popular sizes — bits for all makes of hand or power drivers. Demand Reed & Prince recess — your guarantee of CONTROLLED manufacture.

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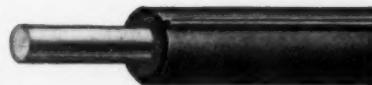
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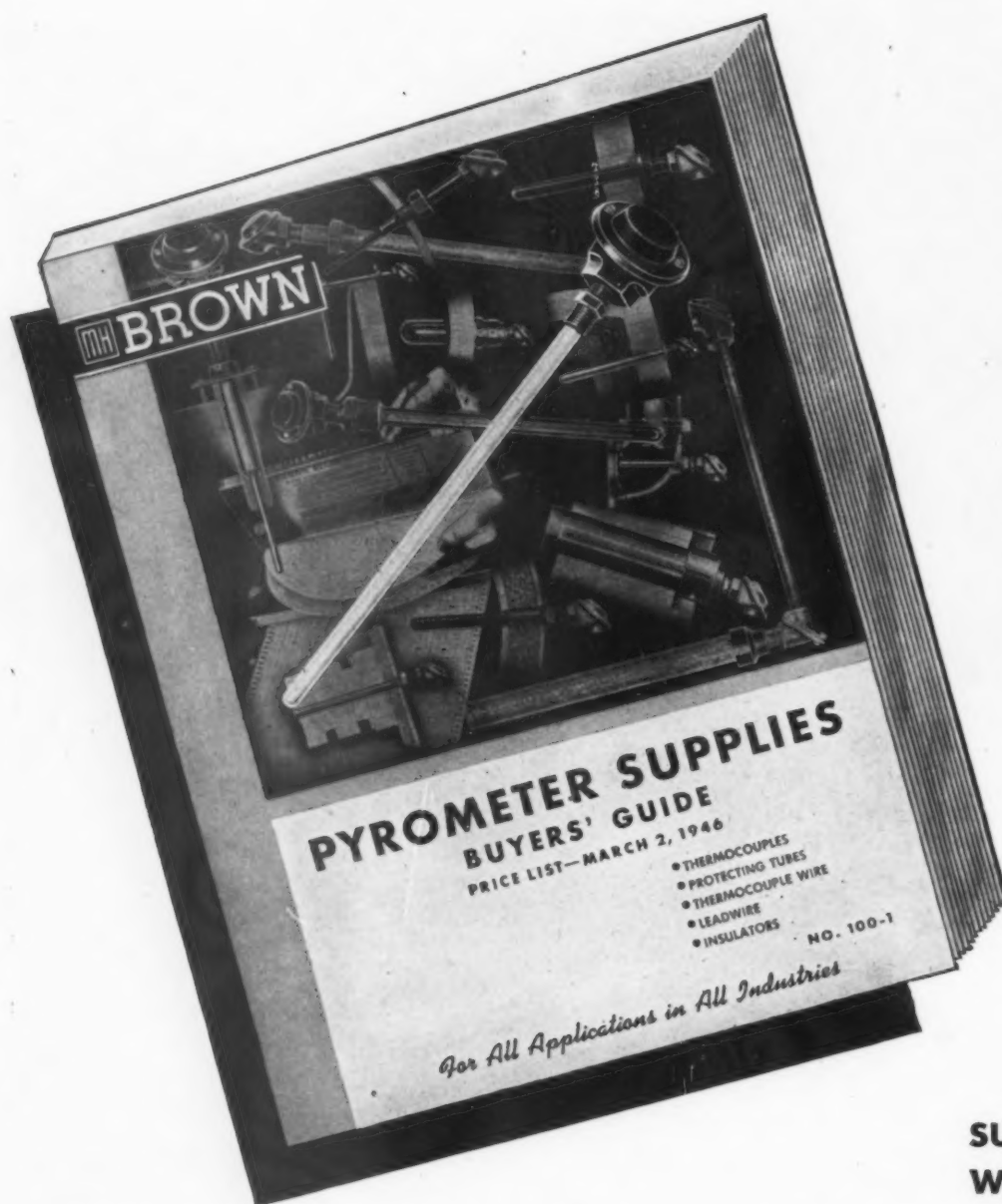
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PURCHASING

The National Magazine of Industrial Purchasing

JULY, 1946

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THE VOICE OF PURCHASING

TRADITIONALLY, the National Association of Purchasing Agents does not take sides on controversial issues of national policy. The broadly diversified interests of its membership in many lines of enterprise, in many cases interrelated or competitive, makes this a practical necessity. And it has proved to be a real source of strength, prestige and influence. For by sticking to the one common interest of procurement, by a realistic consideration of the factual elements in our economy upon which all decisions must be based, the Association has earned a unique reputation for objectivity in which individual advantage is subordinated to the general welfare and private interest gives place to sound economic thinking.

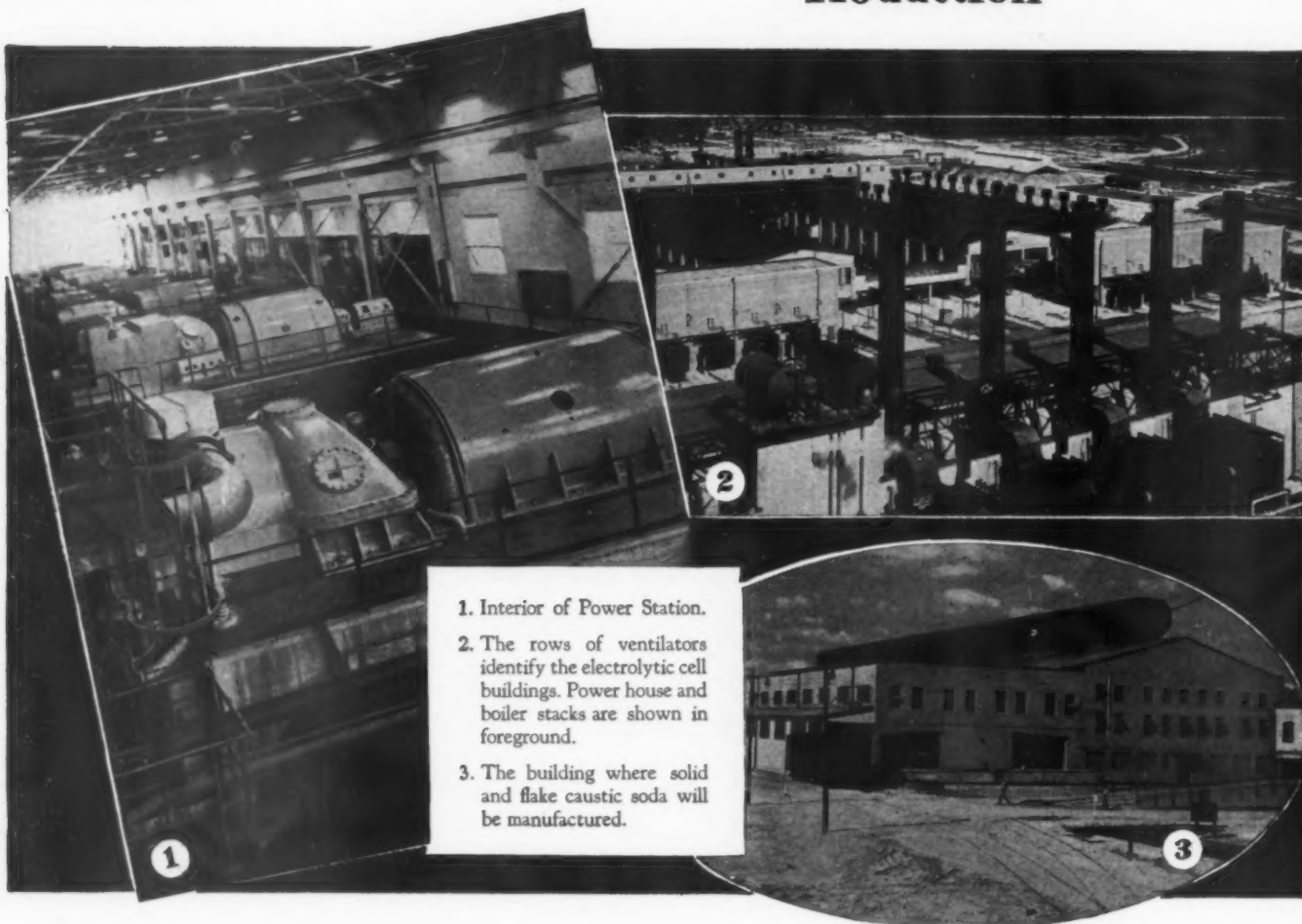
But there was no mistaking the temper of the purchasing men who gathered in Chicago during the last week of May. Attacking the problems of supply and price and reconversion from many angles, speaker after speaker traced the grave difficulties of the present situation to inept governmental leadership, to the red tape entanglements of bureaucracy that has prolonged the emergency months beyond the war that gave it birth, and to the bungling administration of controls that has carried them wide of their original aims. And the enthusiastic reaction of 2,000 listeners left no doubt that this was indeed the Voice of Purchasing.

There was a dramatic note in the fact that this convention was scheduled just at the time when a nation-wide railroad strike had paralyzed normal means of transportation. But so keen was the interest, so vital the topic, that by hook or crook the largest attendance in Association history managed to get to Chicago for the meeting. It was a striking demonstration that the difficulties are not insurmountable when personal initiative and determination sets itself to do a job.

You will not find the Association on record in any formal resolution, but in the analysis of the present situation purchasing men found themselves on common ground. It was a factual analysis, and the record is there for anyone to read.

Stuart F. Neimark

Lake Charles Plant will increase *Caustic Soda—Chlorine* Production



1. Interior of Power Station.
2. The rows of ventilators identify the electrolytic cell buildings. Power house and boiler stacks are shown in foreground.
3. The building where solid and flake caustic soda will be manufactured.

Built to make wartime magnesium, "Lake Charles" is being converted to the manufacture of chlorine and caustic soda. While actual production will not start until some time next year, the existence of certain vital facilities permits an earlier start than would be possible by constructing an entirely new plant. "Lake Charles" will be operated by The Southern Alkali Corporation—a Pittsburgh

Plate Glass Company affiliate. Located in Louisiana, this plant adds an important link to a cross-the-country group of facilities, all strategically located to serve industry efficiently and economically. This group includes a Texas Plant at Corpus Christi—owned by The Southern Alkali Corporation—and Columbia plants at Barberton, Ohio, Natrium, W. Va., and Owens Lake, Calif.



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cipitated Calcium Carbonate)

HIGHLIGHTS

A brief summary of outstanding-features
of timely interest and importance in this
issue, to conserve the time of busy readers



The editorial section of this issue is devoted to bringing you a complete report of the biggest—and in some respects the most significant—gathering of purchasing men ever assembled—the 31st **Annual Convention** of the National Association of Purchasing Agents, held in Chicago, May 27th-29th. Here the buying problems of an exceedingly troubled economic age were brought out into the open. Through all the discussion it was evident that industry is not concerned merely with the immediate problems, but is aware that in their solution we are shaping the pattern of our national industrial economy for years to come. You will want to study the views of leaders in purchasing, management and government on this vital theme.

Keynote of the convention was set at the opening session in Roy Haberkern's realistic and forceful analysis of the present situation: **The Purchasing Agent Looks Ahead** (page 88) and in President Sheldon's admonition to convert **Problems into Opportunities** (page 92). In these two papers is the background against which the entire program is centered.

One of the specific problems in today's buying is the use of **Escalator Clauses** in purchase contracts. The dangers inherent in this practice, and practical ways of handling the problem are presented in two excellent papers by buyers eminently qualified to discuss the topic: Fred Compton of Detroit Edison Company (page 117) and Clifton E. Mack, Director of Procurement for the U. S. Treasury Department (page 121).



An outstanding economist's views on **Inflation**, and what to do about it, are summarized in A. W. Zelomek's comment. As a regular member of the consulting staff of N. A. P. A., Mr. Zelomek has the buyer's viewpoint. (page 94).

Supplementing this is the thoughtful and down-to-earth discussion of successful purchasing policies in a **Sellers' Market**, as summarized by Purchase Director R. C. Kelley of Dresser Industries. More than a formula, it gives the reasons and the applications. Turn to page 104.

Purchasing can meet its important responsibilities only to the extent that **Purchasing Personnel** is selected and trained properly to do the job. On page 106, Stanley W. MacKenzie outlines a successful training program as carried on in one of our leading companies.

Get acquainted with the men who are the recognized leaders of the purchasing profession—the **Shipman Medalist** (page 101) whose record goes beyond business success in his chosen field to include unselfish devotion to Association activities over a long period of years and distinguished public service in wartime procurement; the newly elected **President of N.A.P.A.** (page 91); and the **Executive Committee** which will direct Association policy and affairs in the critical year ahead (page 109).



In contrast to wartime conventions, the 1946 program was not dominated by the Washington viewpoint, but the close cooperation between industry and government necessary to arrive at a solution of present difficulties is reflected in the messages to the convention from **President Truman** and the officials in charge of price control, civilian production, and reconversion. Turn to page 125.

A current report on **Surplus Disposal** and the policies governing this important phase of postwar supply has official force coming from one of the high ranking officers charged with this responsibility. (page 114).

Peacetime use and application of **War Developments** is the subject of a stimulating but highly realistic paper by Col. G. S. Brady, on page 97. Technical progress also has its economic implications.

Don't overlook these monthly departmental features compiled especially for purchasing men—the **Washington Letter** on page 67, with its timely and authoritative preview of official trends on matters affecting industry, as gathered by our Washington office; the listing of **Know-How Information**, that is yours for the asking, appearing on page 14; and the illustrated summary of **New Products and Ideas** that are now available for the industrial buyer (page 140), providing a quick and convenient means of keeping up to date on recent developments.



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Address of welcome to the Thirty-First Annual International Convention of the National Association of Purchasing Agents

By **ARTHUR G. PEARSON**

Assistant Director of Purchases
American Meat Institute

President
Purchasing Agents Association of Chicago

WELCOME to Chicago and to the Thirty-First Annual International Convention of N.A.P.A. You are here to find the answer to our slogan:

*Chicago in May
With the N.A.P.A.
Is sure to pay.*

The first Chicago convention of this Association was welcomed back in 1920. It paid off in fun and a wild good time, as any old member will tell you. There was little time for the serious side of purchasing. At that time the National membership was 3,000, and the Chicago membership numbered only 91.

Ten years later — ten years of profitless prosperity — and we were hosts to the convention of 1930. A jovial convention, with a little more on the serious side and a little less on the fun side. By 1930 the National membership numbered 5,000 and Chicago's had grown to 223. A world shaking depression was already in the making. It was a depression that we tried to say was not just around the corner, but by 1933, N.A.P.A. membership had shrunk to 3,200.

In 1941, with the National organization 5,300 strong and with 355 in our local association, we met in this room. Only a few realized that it was a convention held on the threshold of World War II, although that conflict was imminent and we were already feeling the impact of the first stages of a wartime economy.

The Early Birds Dinner of that year rates with our show of last night. However, it was the serious side of the 1941 convention that held the spotlight. Purchasing agents were recognizing their problems; with that recognition they came seeking solutions. It was, by all measures, a worthwhile convention.

Five years have passed, and again we meet. The cross currents of a hundred forces strive for domination of our economic life. It is both fitting and significant that this first post-war convention be held in the same halls that echoed to our voices during the last convention of peacetime.

A WORKING CONVENTION OF A HEALTHY ASSOCIATION



As President of the Chicago Purchasing Agents Association, Mr. Pearson heads the largest single group of the seventy-one local organizations comprising the National Association. His administration culminates in the distinction of serving as host to the largest N.A.P.A. convention in history. A keen and far-sighted student of purchasing and business administration he has been particularly active in the educational program, introducing and conducting purchasing courses in several leading colleges in the Chicago area. Out of that work has grown a strong Women's Division in the Association, as well as an active younger membership whose interest in purchasing has been fostered by this training. For many years Mr. Pearson served as Purchasing Agent of the National Broadcasting Company. Within recent weeks he has assumed new duties as Assistant Director of the Purchasing Division, American Meat Institute.

We have grown in these last five years. There are 9,600 members in the National, and our Chicago Association—now the largest in the N.A.P.A.—has an all-time high of 682 members. We are on top, and we intend to stay on the top. We will stay there because we believe that our association is an association for all purchasing agents. By being of service to each and every member, we help them grow, as well as growing in numbers ourselves. An educational program, displays of new products, a recognized monthly business survey, good group meetings for both commodity and industrial groups, a Women's Division, together with well arranged and well planned dinner meetings once

a month, build a strong and worthwhile association.

Take home from this convention ideas and plans that will make your respective local groups more active and of more service to each member, to the community and to business.

The Chicago Association is large, but we still have a long way to go. We are not living up to our responsibilities when there are so many purchasing agents in Chicago who have not yet identified themselves with us. True, the four network broadcasting systems are members, almost all of the downtown banks are members, but not one of the outlying banks are members. In the packing industry, out of thirty

Continued on page 338

THE PURCHASING AGENT LOOKS AHEAD



Government controls are responsible for economic chaos, scarcity, inflation, and the breakdown of national morale, but an aroused public opinion can save the day

By ROY C. HABERKERN

Vice President and Purchasing Agent
R. J. Reynolds Tobacco Company
Winston-Salem, N. C.

Address at the N. A. P. A. Convention, Chicago, May 27, 1946.

TODAY, after having successfully passed through the most devastating conflict in the world's history, our reconversion program, in spite of a potential buying power of over 175 billion dollars, unprecedented demand, and unparalleled productive capacity, is stymied because of acute scarcity to satisfy that demand.

Today, in this reconversion period, the world is facing productive stagnation, economic demoralization, famine, and inflation.

Economic Fallacies

After V-J Day, the Administration, prompted by theoretical thinkers and "fact finders," made a wrong guess that deflation would follow cessation of hostilities, with a corresponding drop in employment, production, prices, and income. To counteract that anticipated emergency and cushion the shock, our President encouraged labor to make demands for big increases in hourly rates of pay and ordered the cancellation of many Government controls, *including wage control*. Industry was told it would be possible to raise wages 30% without necessitating an increase in the ceiling price of Industry's products. Labor was adroitly led to believe their "take-home" pay should be equalized with the "straight-plus-overtime" wages paid during the war period to enable them to enjoy a "decent" standard of living, already incomparable to that enjoyed by workmen anywhere.

The slump did not materialize.

Labor accepted the Administration's 30% cue; Industry found it impossible to meet this fantastic increase, and a long strike followed immediately in the steel, motor, and electrical industries, resulting in increases in wages of around 18-1/2¢ per hour. These increased wages put increased pressure on prices, making price control more difficult.

Man-made laws were substituted for the law of supply and demand. Industry was then confronted with a situation where Government assumed the direction of business to the extent of establishing wages and prices on which the life blood of business depends.

Fundamentally, under the American plan of free competitive markets, price control has no permanent place in our peacetime system of operation. It can only breed inefficiency, unfairness, and disregard of law and order.

At the same time, the immediate elimination of price control on commodities essential to our basic standard of living can prove hazardous. I, therefore, take the position, and I am not at variance with Mr. Chester Bowles' oft repeated statement, that our Government should move promptly to eliminate the last vestige of price restrictions in those industries when the supply of any particular commodity comes into balance with demand.

When production restores a semblance of balance between supply and demand, and on articles not important to the cost of living or critical for reconversion and expansion

of civilian production, then a firm and definite policy of de-control should be immediately adopted.

Production Is Stymied

Under the American system of free economy, industry is not expected to, and cannot, operate without a reasonable profit. Without embracing that fundamental truth, any recovery program is impossible. The present base period used by the OPA in considering applications for price increases are the four sub-normal years of 1936 to 1939, in one of which, the records show, with the exception of the years 1931 to 1934, steel production was the lowest since the depression of 1921. Is that a fair basis of comparison if industry is to employ, operate, and produce? In their consideration of appeals for price increases, the OPA should adopt a more liberal formula than that now being generally used.

Several weeks ago, when attending an open forum meeting of purchasing agents, representing many responsible industries, I encountered repeated instances where textile mills, manufacturing goods essential to the everyday walks of life, had been shut down for weeks because they could not afford to take a loss on basis of present ceiling prices, with cotton at 27 1/2¢ per pound.

Another reported finished products requiring both hot and cold rolled steel. The former was available within two or three months because it was a fairly profitable item to the mills at prevailing

ceiling prices, while the cold rolled steel, not being a profitable item to the mills, was scheduled to eight months' delivery because the mills found it necessary to run a larger proportion of the profitable item to balance off the unprofitable. This necessitated, on the part of that manufacturer, the use of uneconomical substitutes at increased manufacturing and production cost to balance production and turn out a finished product.

Utility companies are unable to meet urgent demands for industrial and civilian expansion, for want of transformers, motors, lead, and copper.

Foundries are on curtailed schedule, for want of white pine for patterns and flour for cores. Without these, you cannot have cast iron, and cast iron makes soil pipe, radiators and bath tubs for low cost homes, as well as machinery for ranges, trucks, and automobiles.

Industrial expansion programs, retarded during the war, are confronted with a shortage of building material, lumber, brick, and plumbing fixtures. California's Senator Knowland predicts this year's expert allocation of lumber will aggregate one billion feet. In 1945 we exported 427 million feet, sufficient for 50,000 homes. Today, we export lumber to 23 foreign countries, while Knowland insists Germany's forest resources alone could supply Europe's immediate construction needs and the Philippines could meet the emergency needs of all Pacific areas. With present ceiling prices and restrictions on lumber, is there any wonder this is one of our most virulent black markets? To cope with this particular inconsistency, political and professional partisans are asking that a \$600,000,000 subsidy on building materials be foisted on American taxpayers.

I found many small textile converters reporting inability to secure yarn with which to produce items badly needed in our civilian life because larger producers, seeking to secure yarn for their own production, had bought or merged with the little man's former sources of supply. Latest reports indicate that almost two-thirds of our production of rayon and cotton are now being converted by producing mills instead of being sold to established converters.

This trend toward absorption by integration will have a fundamental effect upon the future of American industry. It will eliminate many small, independent merchants and

manufacturers, and make the newcomer's task more difficult. Responsibility for this trend can only be attributed to material shortages and price control.

We read and hear much about the protective hand of our Government fostering and stimulating small industries, while, at the same time, that same hand, through control and price ceilings, exerts a strangle hold on those same little industries which, in the end, can only spell the extermination of one and monopoly for the other.

What America needs is production—swift, unrestricted, mass production—and production is only possible through a common-sense, unselfish, realistic, approach to this problem of reconversion.

Price Rise Inevitable

You can rest assured there will be no retreat from the 18½¢ scale of wage increase, and corresponding cost increases are inevitable and inescapable. I question if there is a purchasing agent in America today who believes that the retention of controls will encourage production while holding prices down, or one who is not definitely of the opinion that, with the relaxation of control, prices will advance and production increase.

Let us be realistic. Prices are going to advance and will continue to do so in ratio as production begins to fill the gap between spending power and demand. Then, let competition take its course. Naturally, there will be speculators and rapacious parasites who will try to screw the public for every cent the traffic will bear. Black markets demonstrate that today. But their reign is only temporary. The majority of American people are a sensible people and American industry, whose performance during and before the war period has established for them an enviable and unquestionable reputation from the standpoint of production efficiency and fair dealing, is not going to take temporary advantage of a situation which can only react to their undoing.

Subsidies Must Go

Subsidies, the "problem child" or war production and the "prodigal son" of reconversion, we have been told by Chester Bowles, are essential to price fixing. I take the position that Government subsidies should only be resorted to in cases of extreme emergency where payments are made to marginal producers to encourage production of

scarce materials. During the war it was argued that subsidies were necessary to raise production and hold wages in check. Today, we are told that subsidies are necessary to keep prices down and from reflecting the higher wages.

During the fiscal year 1946, over one billion seven hundred million dollars will be spent out of the U. S. Treasury on the cost-of-living subsidies, which serve only as a camouflage to hide the true price of the product. The burden of these subsidies push up Government expenditures which, in turn, are reflected on the general body of taxpayers rather than on consumers of the subsidized products.

The most serious objection, however, to subsidies is the instability they will create when the price control program is finally abandoned. Our Government is paying over fifty million dollars per year to South American countries for the production of coffee; over 700 million dollars per year to farmers and packers for meat; and over 500 million dollars per year for dairy products. When controls are decontrolled and Uncle Sam is no longer a "Sugar Daddy," there will be an increase in the price of coffee from 3¢ to 4¢ per pound; on meat from 4¢ to 10¢ per pound; and on butter 13¢ per pound.

Inflation Is Here

Today, the Administration is asking us to eat less and, at the same time, through food subsidies, is helping us to eat more by paying a part of our grocery bill. Why not remove those subsidies now, when the National income is at an all-time peak, with a minimum disturbance to our economy, rather than involve large price adjustments later that will be extremely upsetting to business? For too many years the American people have been taught to depend upon their Government for a living. It has unintentionally destroyed their independence and self-respect and encouraged them to live beyond their income.

Today, inflation is a stark reality. The primary inflationary force is, of course, the wartime expansion of our money supply in relation to the supply of goods for civilian use. Cash available for spending by business and individuals amounts to 175 billion dollars, as compared with 31 billion in 1919. Liquid savings of individuals is estimated at 145 billion dollars against 27 billion after World

War I. To neutralize this expanded spending capacity, production is the only safeguard that will relieve the pressure for still higher prices.

Of particular interest to purchasing agents, and with a decided inflationary aspect, is their inability to purchase standard articles of pre-war merchandise because the manufacturers, restricted by present controls and ceiling prices, have been forced to discontinue manufacture; whereas newcomers in the field, with little previous experience and limited manufacturing facilities, can, and are, by adding a few useless gadgets, supplying an inferior article at considerably higher cost. The net result is the elimination of recognized sources of quality merchandise and the substitution of inferior makeshifts, for which the consumer pays a higher and inflated price.

The labor situation is the most serious condition facing our productive program today. Over one thousand strikes, an all time high, are now scheduled with the War Labor Board. The responsibility for this condition lies primarily with the Government which practically dictated the wage goal and also the prices of goods. Many Unions are already demanding that their wage contracts be abrogated or reopened if controls are relaxed and prices advance. The result will be the slowing of production, delay in output of goods to fill the urgent needs, higher costs, and higher prices.

Unfortunately, under the Wagner Act, there is no provision to prevent Unions from maintaining their monopolistic power. The demoralizing effect of these strikes is clearly shown in the first quarter deficit statements of General Electric, General Motors, Bethlehem, U. S. Steel, and hundreds of smaller companies, substantiating their position of inability to maintain earnings and pay higher wages in the face of increased wages and prevailing or inadequate ceiling prices, notwithstanding Government and Labor's spokesmen's statements to the contrary.

The Pendulum Swings

The answer is the swing of the pendulum. Time marches on. Aroused public opinion will eventually demand action on the part of our legislators who hazard election penalties by offending Labor, with utter disregard of the good of the Nation. Unfortunately,

however, public opinion is unlikely to be aroused until dire consequences have inflicted damage to our reconversion program.

This present splurge of buying cannot last forever. Increased prices will provoke "buyers strikes." Concealed inventories will appear, as after World War I, and you cannot afford to be caught at a price level that will prevent your participation in the inevitable competition that will follow. We are told that within six months after the mills get into full operation, steel backlogs will be wiped out and a highly competitive market will develop. In this frenzied buying orgy, thousands of consumers are duplicating orders with different sources of supply. When merchandise becomes available, a proportion of orders will be cancelled.

Numerous guesses have been made by statisticians and economists as to the length of time required by industry to catch up with domestic consumer demands. Whether it be three years or five years, we might as well face the fact that the time is not far distant when American producers must meet international competition for international trade. Foreign nations are clamoring at our doors for loans in astronomical figures. The money to be received against those loans will be used largely for capital goods expenditures—machinery necessary to produce steel, textiles, shoes, and other commodities we will eventually meet in worldwide competition.

These are some of the buying conditions you will face in the year ahead but, fortunately, they are only temporary.

The Moral Issue

Of greater significance, however, is the breakdown in our moral fabric. Largely, we have become a loose and easy-living people. The fundamentals of rugged individualism, self-reliance, initiative, and imagination, are no longer instilled in us, for we have been led to believe that our Government owes us a living.

Having participated successfully in two World Wars, the commanding position in which we now find ourselves has made us forgetful of those virtues on which our Republic was founded—unselfishness, honesty, restraint, tolerance, fair dealing, and other homely Christian virtues. Without these, no people or nation can succeed or survive.

Last December, I boarded a Pullman en route home for the Holidays. A tall, pale, slender, and apparently very weak, Lieutenant, just a slip of a boy, supporting his weight on a cane, sat down beside me in the smoker. He asked for a berth but there was none. As he sat there opposite the mirror, flicking particles of lint and dust from his uniform, he would occasionally and painfully move his stiff arm to his hip pocket, take out a little black comb, and nervously run it through his curly blond hair. He, too, was going home and wanted to look his best. I asked the porter to take him back to Lower 7 and together we took off his uniform and propped him up with pillows, for he was most uncomfortable.

Midnight came and he was nearing his destination. The porter dressed him as though he were a child and then led him up the station platform from the rear car of that long train, where his wife and sister were awaiting him. Their meeting was heart-rending. His sister let out an agonized scream that could be heard the length of the station, while his wife, with tearfilled eyes, began telling him how wonderful he looked and how glad they were to have him home.

The following morning the porter told me the young man had been in Italy five months, a bombardier, that his plane had been shot down, and all killed except himself. His right leg was broken in two places; both his arms were broken; his pelvis and his backbone. For months he had been in the Woodrow Wilson Hospital and had just been released.

Affected by the unselfish attention of that colored porter to that young man, who could not help himself, I asked him his name. His answer: "My name don't count. I am just an employee of the Pullman Company. Merry Christmas!"

My friends, such unselfish devotion to duty and humanity is the need of our world today.

"My name don't count."

That, Fellow Purchasing Agents, is today's true answer to this world's most crying need—forgetfulness of self, unprejudiced, classless co-operation. True patriotism, we are told, expresses itself, not in flags or oratory, but in the quiet, daily surrender of personal advantage to the common good.

ALJIAN HEADS N. A. P. A.



GEORGE W. ALJIAN

California & Hawaiian Sugar Refining Corp., Ltd.
San Francisco

President, National Association of Purchasing Agents

GEORGE W. ALJIAN, Director of Purchasing and Packaging for the California & Hawaiian Sugar Refining Corporation, Ltd., San Francisco, has been elected President of the National Association of Purchasing Agents for 1946-1947.

A native of Dyarbekir, Armenia, George was brought to this country as a small boy by his parents. He attended the public schools of Newark, N. J., and New York City; then, when the family moved west, he continued his education at Fresno High School and went on to earn his degree in chemical en-

gineering at the University of California, Berkeley, in 1918.

After a year with the Hercules Powder Co., he joined the C&H organization at the Crockett refinery, working in plant research and standardization of supplies for the operating and technical departments. The transition from these activities to purchasing was a natural step. He became Purchasing Agent in 1933, advanced steadily in assuming full responsibility for the important packaging function, and was promoted to his present dual office and title last year.

Soon after Pearl Harbor, Mr.



Aljian was called to Washington by the War Production Board to serve as a Dollar-a-Year man. He was assigned to the Office of Procurement and Material in the Navy Department, organized and headed a Containers Division for the Navy, developing and activating the program of scientific packaging.

In Association circles, he has been an active worker in both local and national affairs. Joining the Northern California Association in 1933, he was elected to the Board of Directors in 1937 and became President in 1940, subsequently serving two terms as National Director. He was Program Chairman of the 1939 N.A.P.A. Convention in San Francisco, Chairman of the Boffey Memorial Award Committee in 1940, member of the Shipman Medal Award Committee, and is currently active on the national Education and Container Committees. Elected Vice President for District No. 1 in 1945, he now heads the national organization with its 71 active chapters throughout the United States and Canada.

The Aljians live in Oakland, Cal., with their three children—Nancy Anne, 15; James Donovan, 14; and William Peter, 8. There George indulges his hobbies of golf, gardening, and philately, also finding time to serve as District Commissioner for the Oakland District Council, Boy Scouts of America.



The President-elect and First Lady of N.A.P.A. take a bow at the banquet session of the Chicago convention



By **CHARLES L. SHELDON**

Manager of Purchasing, Hood Rubber Company
Watertown, Mass.

President, N. A. P. A.

WE purchasing agents are doing things today that we never did before and that we little thought a few years ago that we would ever have to. They add to our burdens, but in many cases they also tend to broaden our vision and make us better purchasing men.

Frequently in these days a purchasing agent has to take time from the arduous process of securing material for his own company to buy raw materials or do expediting for a supplying company which otherwise would be unable to produce articles urgently needed by his own enterprise. This makes a purchasing agent's job more difficult, but it also adds to his resourcefulness and broadens the scope of his service to his company.

Overnight a purchasing agent may lose an important source of supply. This is teaching him not to keep all of his eggs in one basket, not to be satisfied with only one or two sources of supply but to cultivate many different sources. It gives him more work to do, but it is making him more versatile and effective.

In these days a purchasing agent must be a student of the tangled industrial situation. He must know how to operate in the face of strikes and shortages and government controls and where to find substitutes for materials that may not be available when needed. He must be up-to-date on all of the many new products, new materials, new industrial processes affecting his industry and his suppliers, and he must be the adviser to the top management of his company and its other departments on the availability and

CONVERT YOUR PROBLEMS INTO OPPORTUNITIES

The challenge of the postwar business world — Competition provides the key

Address at the N. A. P. A. Convention, Chicago, May 27, 1946.

practicality of these products.

These necessities of a hectic industrial period may not make the purchasing agent's life a bed of roses, but they make him indispensable to industry as never before.

More than ever before the purchasing agent finds himself in competition with other purchasing agents. This forces him to learn to be a salesman. He must sell his company and the advantages of doing business with it to the man on the salesman's side of his desk. He must make it attractive for salesmen to do business with his company. Salesmanship is an art that some purchasing agents have been all too prone to neglect in the past. Its acquisition should enable him not only to be able to secure more materials, but also to be able to do a better job of selling his community on the importance of the purchasing agent and thus raising his standing in industry.

It is in terms of new developments, products and processes that this postwar period has been most widely publicized. There may have been some wild and extravagant day-dreams about postwar "miracles of science," but we in this convention know well that it is by no means all dream stuff. We are now, I should say, perhaps less than knee-deep in the postwar era, but despite the current strikes and unrest, we purchasing men are witnessing daily new evidences of the creative and developmental accomplishments of the scientists and engineers of American industry.

But the greatest single spur, the greatest single source of advantage to the economic welfare of the nation in this postwar age will not be any new discovery or modern miracle, but that old tried and true American formula which is expressed in the one word—Competition! If we can keep competi-

tion alive and promote it, it will do more for us and for the American people than anything else.

Free competition is the logical way to keep profits within reasonable limits. When profits become excessive in any industry, there are always new concerns ready to step into the field to increase the supply and this always levels off the profit intake. That is automatic protection.

I know, of course, that it is always possible to get too much of a good thing and that unrestrained competition sometimes develops into the cutthroat variety, with attendant industrial ills. I recognize that in times of war and in the wake of war there are serious national and international problems and emergencies which may make advisable some restraints that affect the free play of competition.

But I feel deeply—and it stems from my own experience as a purchasing agent—that the right solution of any of the economic and political problems affecting American industry, including labor problems, will never be found without taking into full consideration the well-established and amply demonstrated power of healthy industrial competition.

I am proud to be a purchasing agent. The very fact that we are confronted with increasingly-difficult problems means that the standards of our profession are continually rising. There is no doubt that purchasing is now recognized as one of the most important departments of modern business.

The unprecedented needs of a war-ravaged world for food, clothing, equipment and machinery—goods of all kinds—challenge us all to do our utmost to help to keep American and Canadian industry, the greatest productive power in the history of the world, functioning with all possible speed and efficiency.





Due to Mr. Zelomek's unavoidable absence from the convention, his paper was read at the Monday morning session by Dr. Robert C. Shook, Vice President of the International Statistical Bureau, Inc.

By **A. W. ZELOMEK**

President
International Statistical Bureau
New York

PEOPLE have written books telling what inflation is and what has caused it in the past. I suggest strongly that you don't read them. All we are concerned with is this particular postwar inflation that affects us now.

1. What are the influences that are causing prices to go up?

2. How and when will the advance end?

3. What will follow?

When the advance will end is the 64 dollar question. I wish I could answer it, but nobody can. Nobody can do more than make a well-informed guess, give his reasons for it, and in that way stimulate discussion by such gentlemen as yourselves. That is what I shall attempt to do. But first, I should like to repeat a remark I made at the N. A. P. A. convention five years ago:

"In dealing with economic problems, simple or complex, it has been my experience that the best results are obtained by sticking to words of one syllable and using common sense."

Common sense is more important now than ever.

The causes of the present inflation are easy enough to understand. The war was very costly—so costly that it might have been expected to make us poor. It did make us poor, temporarily, in the type of goods demanded by consumers and businessmen; but it made us very rich, in terms of money. Temporary lack of goods and excess of money are

INFLATION . . .

and what to do about it

Commodity prices will probably reach their peak during the first half of 1947

Address at the N.A.P.A. Convention, Chicago, May 27, 1946.

what is causing the trouble. In round numbers, here is what happened in the four years 1942-1945:

1. The Government spent 339 billion dollars. Of these, 307 billion were spent to pay for tanks, guns, ammunition, ships, aircraft, military installations, new plants and other war activities. That means they were paid out in wages and salaries to workers, soldiers, management and farmers.

2. Consumer purchasing power went up sharply, but the supply of civilian goods became more and more restricted. National income payments rose from 93 billion dollars in 1941 to 160 billions in 1945. But factories making munitions could make no cars and refrigerators. Construction gangs building military installations could not build new homes. There was a shortage of consumers' goods.

3. The Government did not tax away the growing excess of purchasing power. Total receipts from all sources amounted to only 146 billion dollars.

4. Consequently, to finance the deficit, new money had to be created. The combined increases in total bank deposits and currency in circulation was almost 100 billion dollars.

5. Individuals and unincorporated businesses saved 136 billion dollars. Consumers' debts were reduced by 3 billion dollars.

What Happened Last Time

This simple arithmetic shows why prices are still advancing, ten months after the war has ended. The great increase in money supply raises the demand factor to a new order of magnitude. Everything—commodities, real estate, securities—has to be revalued. It takes time for production to get under way, more time in some markets than in others.

Stop a minute and think back to the time of the last war. If I say the words—postwar inflation—what do you think of? I'll wager that most of you think of 1920, when commodity prices reached their peak. Actually, inflation after the last war continued for eleven years and had three major phases:

1. a commodity price inflation that ended in 1920;

2. a real estate inflation that lasted until about 1925;

3. a security price inflation that did not reach the breaking point until 1929.

Why Commodity Price Inflation Is Short-Lived

It probably strikes you immediately that commodity prices didn't advance as long after the last war as either real estate or securities. There is a simple reason why that was the case.

1. The nation's system for producing commodities is highly developed and very flexible.

2. Shortages are made up very quickly.

3. Although advancing wage rates increase production costs temporarily, this has always been more than offset by greater efficiency within a few years.

4. High profits attract competition very quickly.

5. Psychology is important mainly toward the top of a price cycle, when over-optimism will prolong the rise for a few months, or toward the bottom, when over-pessimism will prolong the decline. It never carries a major price movement far beyond its natural turning point.

6. Commodity buyers and purchasing agents are shrewd businessmen; they may be thrown off balance for a short time, but not for very long.

Contrast this situation with the one affecting houses of securities.

Shortages of commodities are made up much more quickly than they are for homes; and psychology is a far less important price factor than it is for securities. With a set up of that sort, prices will sometimes outpace values for a brief period; but not for long.

How Will the Present Cycle End?

This commodity price inflation will end like the last one, in 1920, ended. On one day, the supply of goods at a given price will not be enough to meet the demand. A few days later, at the same price, sellers will not be able to dispose of all they have. The boom will be over and inflated prices will go down like a punctured balloon.

How can such a drastic change occur so rapidly? It can happen overnight, literally, simply because it is nothing more than a reversal in mass psychology.

Granted that real scarcities exist today in many markets. Buyers know this, and are doubly anxious to purchase; sellers know it and take advantage of it. *But even today, supplies of most items are increasing.*

The gain in supplies is not yet impressive. It may be interrupted from time to time by strikes. Costs may rise further. Shipments are sometimes delayed or held back. Sellers naturally continue to emphasize the difficulties and the problems. Many buyers lack information about the true level of production and believe anything they are told. By shopping here and there for wanted items, they give sellers an inflated idea of what the true demand is. *But all the time the supply keeps gaining.*

One day some buyer, who is more far-sighted or more intelligent or better informed than the rest, decides the time has come to be cautious. He quietly cuts down his

buying or perhaps cancels a few orders. A few more buyers follow him. Or there may be a spontaneous buyers' strike at the consumer level. Or perhaps a few sellers, seeing the end of a one-way street, make some sort of concession. The news spreads. Within a day or two everyone has heard it. Practically overnight it is realized that the scarcities that were so real a few months ago have suddenly become fictitious. The boom is over—the deflation gets underway.

Role of the Consumer

The consumer plays a bigger role in ending these commodity price advances than the industrial purchasing agent may realize. Capital goods are the heart and soul of the economy, but consumers' goods are its body.

If consumers should decide tomorrow that most of the goods available to them were not worth the price, if they should go on a general buying strike as they did in 1920, the advance in commodity prices would be over.

When is the public likely to decide that it wants no more of today's qualities at today's prices? I don't believe that will happen this year. Consumers have accumulated savings upon which they can draw; what is more important, they are still piling up current savings at an unprecedented peacetime rate. Until this exaggerated rate of savings has been reduced to a more normal level, consumer goods markets should be able to absorb supplies as they become available.

Before the public's savings from current income are reduced to anything approaching a normal level, consumers will have to increase their spending by from \$15 to \$20 billion above the record 1945 level. And before spending can be increased to this extent, there will

have to be an even greater rise in the value of consumer goods production, since some supplies will go into inventory and some into export.

I believe the conclusion is justified that the value of production will have to increase by between 20 and 30 billion dollars before there is much danger of a spontaneous buyers' strike.

A Forecast

The time has now come for me to stick out my neck.

When will we reach the peak in commodity prices? Not this year, I feel rather confident. And not in 1948, I feel even more certain.

That leaves 1947. Will the peak come in the last half or in the first half? I'm not inclined to pick the last half of the year. Price advances are coming a little too rapidly. Every advance of 10% adds about 10 billion dollars to the value of supplies. Add one or two advances of that sort to a rapidly expanding unit volume of production, and you have a major increase in the value of supplies.

I'm thinking about another factor, too. That is the attitude that the public will take next January and February, after the Holiday shopping period. I shall be very much surprised if the public does not spend freely and carelessly next Christmas. I believe the first quarter of 1947 will be an important testing period for consumer demand. I shall not be surprised if there develops at that time a marked resistance to poor quality and high prices.

For the record then, I believe the high point in commodity prices will probably come in the first half of next year. I believe the high point for official commodity price indexes will be from 10 to 12% above current levels, and that the



actual gain will be closer to 15 or 20%. Just when the peak comes will depend on the extent to which strikes or other factors limit production; on the rate of price advances from now on; on the extent to which there might be a final speculative outburst if price control expires next March; and so on.

Price Controls

Elimination of price controls at the end of June would certainly be followed by sharp price advances. Unless there were almost continuous major strikes, however, I doubt that they would last through the first quarter of next year.

Second, even though price control is continued there will still be substantial advances before prices reach a peak. OPA's appeasing its enemies now with rather liberal advances. Between the first of July and the elections in November, price control administration will revert to a tougher policy. After November, the visible price advance will get under way again.

On the whole, extension of price control will probably delay the peak in commodity prices by about three months. We'll get to just about the same place, but not quite in the same time.

Some Time Tested Advice

There are some bits of advice that are always good. They apply in good times or bad, in normal price movements or inflationary cycles. They are as sound in one market as in another. They are particularly worth repeating when speculative sentiment is high, for that is when they usually are forgotten. Here they are:

1. Don't be greedy. If you've already made nine dollars, let someone else make the tenth.

2. Don't speculate for quick returns. You may be lucky enough

to make large profits; few are lucky enough to keep them.

3. Don't overwork your money. When you take a profit, don't rush immediately into another investment merely because you are unwilling to have your money idle or drawing a low rate of interest.

4. Don't under-estimate the value of cash. Your dollar, on the average, may buy 10% to 20% less a year from now than it will today. But two years from now, in many markets, it may buy 10% to 20% more.

5. Don't forget that prices go down much more quickly than they go up.

6. Don't bemoan profits you may have failed to make; you might also have suffered losses. Exercise your foresight rather than your hindsight.

7. Don't expect that anyone will be able to pick the exact top in any market or when it will come. There is no magic formula for forecasting. Be suspicious of anyone who tries to convince you that there is.

Some of these apply to the speculator or the investor, rather than the purchasing agent; but they are all worth remembering.

How Businessmen Can Protect Themselves

In planning his purchasing policies, the businessman must recognize that:

(a) Commodity prices will advance further, probably not reaching their peak until next year; but

(b) This rising cycle will be followed by a decline.

An excess of purchases over sales will increase profits during the remainder of this year. However, such a policy, while it will turn the rising price level to the advantage of the individual businessman, will naturally contribute to the pressure that is forcing prices up-

ward. Moreover, it cannot be applied uniformly to all commodities. Some prices will begin to decline well before the peak for "average" wholesale prices has been reached. Such a policy must be applied selectively.

Finally, such a policy is frankly speculative. It accepts a small risk now in order to avoid a greater risk later. Unless it is accompanied by something more, or if it is continued too long, profits made now will be offset by losses incurred later. Consequently businessmen should:

(a) Increase inventory turnover and reduce the length of commitments after the turn of the year; and

(b) Reduce fluctuations in inventory valuations by using LIFO (last in-first out).

(c) Not over-estimate postwar demand on the basis of current demand. The latter has a lot of inventory replacement, deferred demand, and duplicate ordering in it.

And he should also remember this: The most abiding asset that can be carried over into any deflationary period is the good will of customers won by fair dealing during the inflationary period that preceded.

I said little about OPA because, at this stage, the Federal agency may still be able to cause ripples in the strong current of inflationary forces; but it cannot stem its flow.

And I said nothing about the theory of equilibrium between prices and money supply because I believe, and I think you gentlemen will agree with me, that the main equilibrium of prices is with basic production costs and competitive conditions. I am quite sure you will not buy commodities where the price gets too high, merely because your companies have large deposits in the bank.



By **GEORGE STUART BRADY**

Materials Consultant
Washington

PEACETIME USE OF WAR • DEVELOPMENTS •

AT this date, more than a year after the close of the war in Europe, most of us have come to the realization that our postwar planning, which we thought would be so much better done than after the last war, has not come up to expectations. Most of us made the mistake of not realizing that reconversion to a peacetime basis meant more than simply changing over the equipment in the factories.

Two years ago I told this Convention that I believed that outstanding results of the war would be the tremendous increases in production that would make many materials in greater supply than ever before, the erection of new production facilities in entirely new geographical locations that would open up new markets, and the development of new resources and processing industries in foreign countries. These things are accomplished facts, but in this year of peace we have not reaped the benefits. One of the biggest problems today, in spite of greatly increased production, is the shortage of raw materials. These shortages are not merely the result of labor troubles; they are more the result of inability to arrive at economic levels of utilization.

What we did not realize in our reconversion planning was that the whole fabric of raw materials supply was alternating in the five years of war. While the possibilities for synthetics are unlimited, they have not taken the place of old materials. The older natural materials have not only increased in use but they have entered new fields of use, and they have not yet balanced themselves with their new positions or with the new synthetics. Moreover, methods of production and newly developed sources of materials have so changed that their basic economic structure in industry has changed, and because of the retention of wartime controls we do not yet know what the true impact of the changes will be.

The tremendous pace set up by the laboratories of the country has not slowed down. The new discoveries made during the war, instead of exhausting the field of discovery, have opened up so many new frontiers that we find new worlds of materials unrolling so fast that our social-economic system has not been able to absorb them. Every new development when brought into practical application has served to bring

out new fields for research into previously unthought-of applications. However, that the laboratories are far ahead of the designers' and production men's adaptation of materials to commercial use, does not disturb men as much as the fact that top management has lagged since the end of the war in the coordination of economic factors that are necessary if the world is to get the full benefit of new developments.

In this year of reconversion we have been brought squarely against some of the practical difficulties of incorporating new materials into our commercial products. Gasoline, as one isolated example, is today far ahead of present designs in automobiles. But it is a slow and tedious job, complicated by present investments and by a buying demand that prefers to take old models rather than wait, to get the results of our war developments into the hands of the public. It means the throwing aside of present equipment, the design of new engines and of tools to get them into production, and the co-ordination of distribution of the new gasoline with distribution of a continued supply of the older fuels suitable for the millions of cars still on the road.

What the raw materials situation needs most today is a period of natural readjustment wherein the new economic factors have sufficient free play of the natural law of supply and demand so that on a truly competitive basis each material can be employed where it is most economically suited. I do not believe that there is any single group of individuals so mighty and god-like that they can sit in Washington or Mos-

Progress in new materials has outstripped their commercial application — Problems of supply are largely the result of political meddling and ineptitude — Industry must take the lead in establishing sound and economic utilization of our resources

"Never mind the planners — Go forward!"

Address at the N.A.P.A. Convention, Chicago, May 29, 1946

cow or any other one place and tell the combined brains of America how and when they should employ raw materials in our vast and complicated industrial system. Economics is a true and necessary science, but present indications are that the term "economic analyst" is doomed to arrive at the same disrepute as the terms "efficiency engineer" and "alchemist".

An industrial system as vast as ours does need laws and general public controls to prevent unscrupulous operators from treading on the shoulders of others. I am not prepared to say here that all wartime controls should be suddenly removed. But I do say that the political economists now in the saddle do not seem to realize that the old equities among the raw materials of industry have been obsoleted in the past five years, that no man or single group of men is big enough to foresee all the changes necessary, and that these materials will never be fitted into their proper places in new products as long as the artificial controls govern.

This is not Russia, and you have not yet been asked to stay home and work under five year plans. But our democracy government is what we make it ourselves. If American industry had not gone wholeheartedly into taking an active part in government in 1940 we would have lost the war. If American industry now leaves its government to professional economists, lobbyists, and politicians, we will continue to lose the peace as we have been doing in the past year. Today we cannot afford to lose the peace because one-fifth of the land area of the world is

now ruled by a government whose principles are antagonistic to our industrial system and our way of life, but whose methods of action are so direct that it can still get things done in peacetime quickly, while in peacetime we have been drifting individually apart with less and less co-operative action.

Before the war we were most extravagant in the use of tungsten, chromium and nickel in general industrial construction. Because of some fanciful advertising values we were using high alloys at increased cost of materials and machining labor in applications where well-balanced low alloy steels would have been ample. But when representatives of the entire industry co-operating with government set up a range of low-alloy steels that could be made easily with alloy scrap two things happened. Manufacturing plants began to realize for the first time that these low-alloy steels were more economical for many purposes than the high-alloy costly steels they had been using, and, the steel manufacturers so improved these un-uniform emergency steels that they now constitute a definite advance in structural materials.

This could not have been accomplished in such a short space of time under our prewar peacetime lack of co-operation; the Germans had such low-alloy steels and we had done little with them. Sellers, in a free economy such as ours, will always sell a more costly material if the consumer is willing to buy it, and the seller will use every device of our extravagant advertising system to get the costly materials across. This case of steels applies equally to many other materials. I hope that we are not going back to the prewar wanton waste of scarce materials, but I see no remedy for it unless materials manufacturers will co-operate among themselves as did

these steel manufacturers, and unless procurement officials are able to check the glamour boys and make certain that when high alloy materials are called for they are actually needed for the job.

The phenomenal increase in production of the light metals aluminum and magnesium was one of the great achievements of the war. At the same time, the experience gained in the working of these metals in the great aircraft program has shown their possibilities for a wide range of civilian products. But practical application to commercial products has lagged far behind our knowledge of possibilities. Almost any designer today can enumerate a long list of desirable applications of magnesium alloys, from typewriters to lawn mowers and boats.

The slowness of overcoming the management difficulties in the introduction of materials to new uses has retarded application of the light metals to railway equipment where large tonnages could be used. But the process of technical change to use more of the plentiful light metals is definitely on the way, and I do not fear that we have over-expanded on the production of these metals. In fact, that greater expansion will be necessary. Right after the close of the war, magnesium production dropped down to very little. This year's consumption may not be more than 75 million pounds, but when new designs of consumer goods get well under production in another year or two the consumption of magnesium should exceed 200 million pounds, or 15 times our consumption in 1940.

This subject of the plentiful metals aluminum and magnesium leads right into the sad story of our lack of economic balance among a number of the metals, a matter which is actually holding back raw

materials readjustment and causing some of the apparent shortages. My belief is that many of the so-called shortages today are not real shortages at all, but are the effects of artificial interference with economic laws without due regard for the technical changes that have taken place.

Last year, with a production of copper twice the prewar average, and most of it going into direct war work, it looked like a surplus of this metal as soon as the war was over. But the copper price has been held by the Government at a level equal to what it was 50 years ago, when you could get a beefsteak for 10 cents. Likewise, lead and zinc, both relatively scarce metals in the world, are held down to low prices by artificial means.

I have discussed the subject with officials who battle with almost religious zeal to keep the prices of these metals down. The only plausible argument I have encountered is metals will prevent a rise in the price of the products manufactured. To keep copper at the 12 cent price the Government has had to pay bonuses and drop its own income from import and excise taxes, besides spending vast sums in foreign development work and in salaries to a host of officials. At the very same time other officials in another agency have been using bonuses, subsidies, and support prices to bring up the prices of oils and fats to twice and three times what they were before the war. We use annually 5 million tons of these oils and fats, an amount greater than the total tonnage of copper, lead, zinc, aluminum, and magnesium combined, and they enter into and affect the price of almost every type of manufactured product.

In the meantime the price of the light metals has dropped drastically



without benefit of the economic planners. I note a recent price reduction on aluminum in Canada to 12 cents a pound. The natural occurrence of aluminum on the earth is about 4,000 times the occurrence of copper. But copper is easy to extract from its ores, and the cost of production is lowered even further by the fact that many copper ores also yield silver. As a consequence, this scarce metal, because it happens to be easily accessible on the shelf, as it were, we use profligately like a small boy with a jam pot. And as long as copper is made artificially a cheap metal by holding down its price close to that of aluminum, it will continue to go into uses where it does not belong. It then, of course, figures as a shortage item and gives any believer in controlled economy the opportunity he wants for advocating allocation controls.

I have always maintained that copper should never be used for the making of products that are not susceptible to salvage and re-use of the metal. But I am not in favor of government controls in peacetime to tell manufacturers when and where to use copper, because I believe in the principle set forth by the founders of this republic that "The sole object and only legitimate end of government is to protect the citizen in the enjoyment of life, liberty, and property; and when the Government assumes other functions it is usurpation and oppression." Will we never learn that fascism and communism are fundamentally nothing but the philosophy that political office holders should run the people instead of the people running the political office holders? Will we never learn that in the philosophy of the founders of this nation a controlled economy by political office holders is a repugnant thing, but that we open the way for office holders to introduce controls

by our own self-seeking acts and disregard for the good of the whole?

The artificial holding of a scarce metal at a low price comparable to other more plentiful metals is not protecting the peoples' interests, however specious may be the arguments that it is intended to keep down the costs of the consumer products containing the metal. Rather, it constitutes an actual wastage of the peoples' natural resources and thus violates the principle that government should protect the property of its citizens.

It is true that we might see a run-away market temporarily in copper if price controls were removed, simply because too many of our products today are designed for the use of copper and brass along the lines of prewar thinking. But we will never arrive at a proper balance in the use of copper, aluminum, and magnesium until we have free markets. A more sensible way to the public protection of a scarce metal would be to place an excise tax on its extraction from the land. That would be in keeping with a government's true rights, but it would automatically raise the base price of the metal.

About 40% of our lead consumption is going into paint pigments and tetraethyl lead for gasoline. In these uses more than 200,000 tons annually is permanently lost and is unrecoverable. Our chemical industry has now developed processes for making permanent lake pigments that would take the place of much of the lead pigment if we had true economic competition, and our war advances in catalytically cracked gasoline would give lead-charged fuels stiff competition on the same basis. But if the Government is going to continue to control metal prices so that we cannot arrive at true economic balances, then you can expect to see the shortages con-

tinue and see scarce metals lost in unrecoverable uses.

I cannot believe that all these government planners are ignorant of these principles. I cannot believe that they think that price controls over industrial raw materials will work without allocation control. The assumption, then, is that they must believe in and hope to get a controlled economy. The OPA has recently had a bad scare in the Congressional threat against it, and it may alter some of its thinking, but the old principle that eternal vigilance is the price of liberty ought to be dusted off and kept right in front of every industrialist who buys and sells raw materials.

During the war silver became more widely established as an industrial metal. We are using it for motion picture film, strong brazing solders, electrical contacts, bearings, parts for electrical equipment, duplex metals for chemical and food machinery, and for industrial plating. We are using well over 100 million ounces annually in industry, about twice the amount we ourselves produce, and my estimate is that this will increase to at least 200 million ounces, or as much as the entire world production if permitted to go unchecked. Silver is a metal that is absolutely necessary for monetary stabilization in the postwar world. The monetary silver stocks held by the governments of the world are not much more than 6 billion ounces, which, with prospective postwar volumes of world trade, is not one-tenth enough to enable us to arrive at world economic stability. This subject of silver is too important to be permitted to again become a bi-partisan political issue. Industry needs more silver, but I think that it is going to have to pay more for it and that we are going to have to produce more.



Our oil chemistry techniques have developed during the war to a point where we can take any kind of vegetable or animal oil, split off the fatty acids and reassemble them into paint oils, plastics, waxes, new foods, textile fibers, and many chemical and industrial products. But right now the paint industry is hampered because of a shortage of oils; the plastics people and other industries are unable to get the materials which are made from oils.

But there is no shortage of oils and fats in the world. There is only a deplorable lack of proper organization to use the resources that nature has given us in teeming quantities. Perhaps a century hence someone will write a history of the economics of these times, and he may comment on the absurd folly of a government asking its citizens to keep a tin can on the back of the stove to save a few pounds of grease while millions of tons are burned or lie unused. I wonder what he will say of the restrictive laws that hamper the use of one product, like margarine which today is as good as butter, to favor the producers of another product, of the subsidies that seek to take the farmer away from raising crops that grow best on his land and entice him to raise oil crops because someone does not want them to be bought from foreigners who do not agree with his political concepts.

If we could obtain in this postwar world among the truly democratic countries anything like the trade co-operation that existed during the war between the United States and Great Britain, we would not have the shortages that now exist. Argentina burned enough linseed in one year to supply us with linseed oil for two years. Northeast Brazil is teeming with oilseeds and oilnuts going to waste, enough to provide industrial and food oils for the whole world. Our treatment of Argentina can be traced to the actions of a very few officials, but do not make the error of thinking that Government is solely responsible for the chaotic materials supply conditions of which oils and fats is only one example. Remember that the bonuses, acreage premiums, restrictive tariffs, processing taxes, support prices, and other devices that are only fancy names for economic bribes were asked for, fought for, and lobbied for by groups of men who could not or would not meet competitive conditions and forced the Government to make the road smooth for them without regard for the principle that when you

give a stick of candy to one child you must give to all others.

Men who have been sent to foreign countries by companies to organize and procure materials have not, in my estimation, done better than the average of official representatives sent abroad. In the matter of oils supplies, co-operative action has been completely lacking. Northeast Brazil has been studied and analyzed to ridiculous extremes by scores of men sent there, but they have never gotten further than forcing our Government to act as buying agent. Their reports have all been practically the same, and could have been written right at home; transportation difficulties, lack of processing equipment, lack of labor, have been the arguments. But when the steel companies wanted iron, they built roads and railroads, brought in machinery, trained labor, and got the iron. If American industry will co-operate to convert to peace as it did to convert to war we can get ample supplies of oils and other materials.

This co-operation is necessary to develop the materials that we now need in quantity from overseas. It is also needed in many cases to bring into commercial utilization many new sources of domestic raw materials. During the war we have proved that we can obtain great supplies of copal varnish resins from Utah coal, and of montan wax from Arkansas and California lignite. Before the war we imported the copals from the Far East and the montan from Germany. We need greater quantities for our postwar industries. We can get 5,000 tons of high-grade copal from every 100,000 tons of Utah low-grade coal, and we can get up to 13,000 tons of montan wax from every 100,000 tons of Arkansas lignite. But chemical companies do not care to go into the coal business, and the development will require the mining of coals and the subsequent briquetting and marketing of the residue fuel. Technical men are ready to do these things, but management must furnish direction.

This country did not come out of the war impoverished as did many other nations. We have more ready cash available for development work than ever before in our history. We have become the leading industrial and financial nation in the world. But leadership and the ownership of capital entails a moral responsibility. The rich man in the Bible was not sent to hell because he refused to give aid to the beggar

at the gate. There is nothing in the story to indicate that he even knew the beggar was at the gate. He was condemned for just one reason, that he was not aware of his moral responsibilities. I am not pessimistic, but I think that something approaching the Biblical hell is at hand for the democratic countries if they do not pull together and co-operate to keep the leadership.

Russia has embarked on a program of economic control of raw materials that is much more positive and realistic than that which was planned by the late paperhanger. Her iron hand has moved across Europe and taken the best sources of petroleum, coal, copper, zinc, uranium, and many other materials. She was within a hairbreath of tipping the scales in France, and she will control the copper, iron, oils, cork, and other materials of Spain if present moves succeed. She already has the petroleum and minerals of Iran up one sleeve, and it is then only a step to close off from the western world the oil, chromium, and other minerals of the Near East and the rich resources of northern India.

The western nations refused to believe what Germany was doing even when Adolph Hitler, with the aid of his geo-politik helpers, wrote what he intended to do in a book. The Soviet writings are even more specific about what they are going to do. It is true that they assure us that they do not intend to take territory; but we had similar promises about Austria, and Czechoslovakia, and Poland before the war.

Our whole materials supply situation is being held together today in a state of artificial unbalance that is socially dangerous in view of the increasing power of an antagonistic system of government that was not an important factor after the last war. The time has come to stop sitting back ready to criticize government, and co-operate to make government what it should be. In my estimation the best expression that came out of this war was when General Bradley called up General Eisenhower and said that they had captured the Remagen bridge but the staff planners did not want him to cross as it would necessitate complete change in plans and positions. Eisenhower answered, "Never mind the planners. Go forward." If we could make that a slogan of top management today we would have plenty of raw materials and the biggest boom in new developments that this world has ever seen.

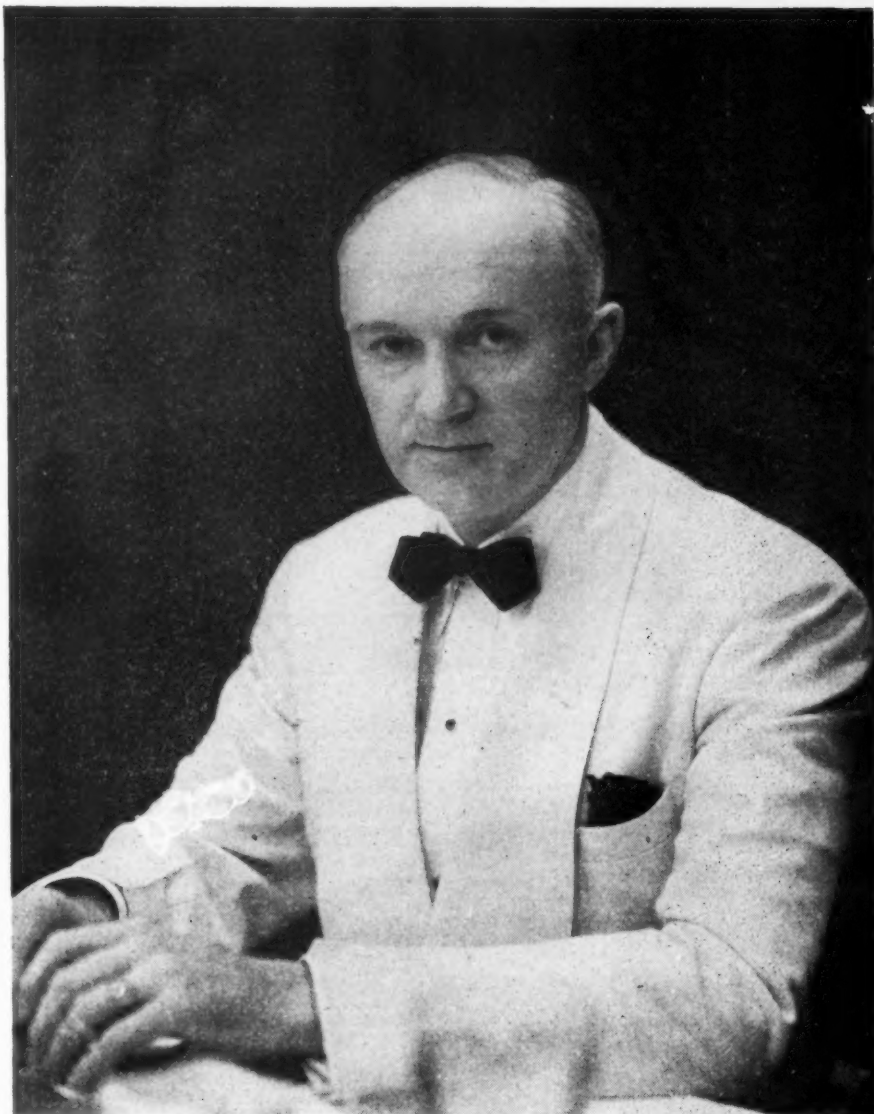
SHIPMAN MEDALIST — 1946

THE J. Shipman Gold Medal for 1946, in recognition of outstanding service to purchasing, was awarded to George E. Price, Jr., General Purchasing Agent of the Goodyear Tire & Rubber Company. His selection for this high honor was a popular and well merited choice.

Mr. Price's record in Association work is unique. Charter member of the New York Association and of N. A.P.A.; founder of the Akron Association in 1922 when he came with Goodyear as Assistant Purchasing Agent; twice president of the Akron group; twice elected to the National Executive Committee, in 1925 and 1939, as Vice President for District No. 6; National President in 1940-1941; active and able worker on local and national committees, and for the past several years Chairman of the Business Survey Committee.

With Goodyear, Mr. Price has supervised the purchasing activities of a nation-wide organization, and for a year was assigned to the establishment of a purchasing department for the company's plant at Wolverhampton, England.

Long an advocate of preparedness and an expert in military procurement, he had prewar service as a Major in the Quartermaster Corps, U. S. Army, attached to the Akron District Procurement Office. With the outbreak of World War II, he was commissioned Lieutenant Colonel and went to London as a member of the procurement staff for American forces in the European Theater. When that organization work was completed, he was released to direct the construction and procurement activities of Goodyear's great war production program.



GEORGE E. PRICE, JR.
General Purchasing Agent
Goodyear Tire & Rubber Company
Akron, Ohio



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Mr. Price acknowledging the award of the J. Shipman Gold Medal, which has just been presented to him by Vincent de P. Goubeau, Chairman of the Shipman Award Committee, at the annual banquet of N.A.P.A. at the Stevens Hotel, Chicago, May 28th. Serving with Mr. Goubeau on this committee were Oakley W. Dexter of Seattle and William L. James of Tulsa.

CONVENTION NOTE BOOK

The rail strike, coming at the very moment when a couple of thousand purchasing agents were about to entrain for Chicago, failed to dampen the convention enthusiasm or seriously curtail attendance, though there were some belated arrivals and the night clerk of the Stevens had a busy time taking care of those whose last-minute plane reservations landed them in the lobby from 2 to 4 A. M. Rather, the transportation difficulties added a spice of adventure in getting to the meeting. President Sheldon's banquet remarks mentioned arrivals by covered wagon and on horseback. That was oratorical license, but not too far out of line, for there were many interesting experiences to be exchanged on ways and means of travel.



When plans for special cars went haywire, the Cincinnati and Pittsburgh delegations made the trip by chartered busses. The Canadian contingent made up a veritable motor caravan. Outstanding example of determination was George Drury's party from Seattle. When the strike call became a certainty, they climbed into an automobile and drove straight through—2,000 miles, with four drivers alternating at the wheel. Yes, they made the Early Birds dinner.

Charlie Sheldon also arrived in style. Marooned on the train at Springfield, Mass., and hearing the conductor's announcement, "All out! End of the line," the N.A.P.A. president joined the other passengers in staging a strike of their own, declined to get out, and insisted on spending the night in the parked Pullmans. Meanwhile, by long distance telephone, he commandeered a car and chauffeur from a Boston friend. The driver had naively assumed that he was going

to take Charlie back home, but instead he got the order, "Chicago, James." So they came on through, accompanied by Vice President-elect Healey of District No. 9. James, totally unprepared for such an assignment, hadn't even a toothbrush or a change of underwear along, but these deficiencies were cheerfully supplied, and it is presumed that the necessary explanations for his protracted absence were also made to his family and employer.

One contingent from the southwest was technically stalled at Kansas City at strike time, but a good natured train crew, who decided to come on to their homes in Chicago anyway, brought the passengers along for the ride and delivered them approximately on schedule time. By contrast, another group from the same section was uncereemoniously dumped a half mile out from the Englewood station, and they were obliged to lug their own baggage down the tracks to other means of transportation for the last lap of the journey.

The Early Birds dinner show lived up to the highest standards for this event. Featuring Gypsy Rose Lee as the stellar attraction, it was fast moving entertainment from start to finish. Even with such a headliner, the fellow who really stole the show was a good looking young impersonator hastily drafted from one of the local hotel clubs to pinch hit for a team of marimba players whose costumes and instruments were stranded in a baggage car somewhere out on the tracks. It was a happy substitution, and the youngster seemed to enjoy doing his turn as much as the audience enjoyed listening. The M. C. also was tops. And speaking of



tops, when he was introducing a list of the N.A.P.A. notables he came to the conclusion that anyone retaining a head of hair automatically becomes ineligible to hold office in this organization. He was also amazed to find that the new vice president from the deep south goes by the name of Grant Clark. Page Senator Claghorn!

Chicago's Mayor Kelly, who had made an excellent impression at the 1941 convention by appearing in person to welcome the assembled buyers, and was scheduled to appear on Monday morning's program, disappointed by sending over his Commissioner of Public Works as a substitute, to do a routine hand-shaking job.



By common consent, the highlight of the program was the hard hitting address by Past President R. C. Haberkern at the opening session. Roy's previous convention assignments have cast him in a more philosophical role, but he came through with a fighting speech, superbly delivered, and there weren't enough decibels on the applause meter to register the enthusiasm with which it was received. Rarely has a convention gotten away to such a rousing send-off.

Flop of the convention was the complete lack of discussion following the major addresses. A new plan had been put into effect this year with the appointment of official "Question Askers" whose names were duly emblazoned on the program. But at session after session these gentlemen arose to report "No questions". Maybe a general convention session isn't the place for discussion; if not, that fact ought to be recognized and the sessions should be billed for what they are—a series of formal statements of well qualified individual opinion. If discussion is de-

sirable, some more effective plan will have to be devised to encourage it. As usual, many of the group meetings amply made up for the lack of discussion and questions at the general sessions.



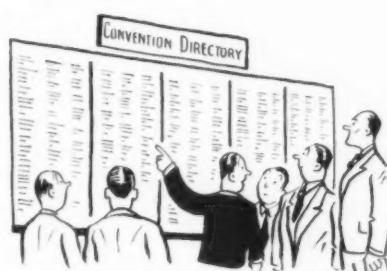
Another of the disappointments was the address by John D. Small, Administrator of the Civilian Production Administration, despite the dramatic manner of its presentation. It wasn't altogether Mr. Small's fault. Anticipating the possibility of legislative action which would have made real news in CPA policy, he was forced to cancel his appointment with N. A. P. A. in Chicago and stick close to his desk in Washington, ready for immediate action. A long-line telephone hook-up was hastily arranged to bring his voice to the convention hall on Tuesday afternoon, and one of the largest audiences of the entire convention period assembled to hear what he had to say, overflowing into the lobby, where additional loud speakers had been set up. If the expected developments had materialized, it would have been a significant and perhaps sensational message. But things did not develop according to plan, so we heard only the trite story of impending shortages and the standard plea for co-operation.



Garnet Dickson, Canada's new representative on the Executive Committee, found the doormen and cab starters exceptionally polite and attentive. The explanation was forthcoming on the second day, when one of them deferentially addressed him as "Mr. Truman". It was not an unnatural mistake, and

either Mr. Dickson or Mr. Truman should feel complimented. After the doorman was set straight, service got back to normal.

The consistently active interest in Inform-a-Show exhibits proved that it wasn't necessary to have punch cards and door prizes to draw purchasing men to a really good and informative show. There was always a healthy crowd gathered, too, around PURCHASING's directory board in the Inform-a-Show lobby, and we hereby formally acknowledge the many spontaneous words of appreciation for providing this service. We were very glad to do it, and hope to have the privilege again.



The Inform-a-Show awards for most informative and most attractive exhibits went to the Yale & Towne Mfg. Co. of Philadelphia and the William D. Gibson Co. of Chicago, with honorable mention for the Dictaphone Corp. of New York and Chase Brass & Copper Co. of Waterbury. The judges had a difficult job, but came up with a popular and well merited verdict.

The Utah Association, for the umpteenth time, carried off the convention attendance cup. Right up there with the winner was the Houston Association, which took the place, and the Eastern New York Association, the show.

President Sheldon's voice, which has taken a terrific beating in his tour of the local Associations all year, lasted just through the banquet session before giving out. He conducted the final Executive Committee meeting on Wednesday morning in a muted whisper, assisted by George Renard as interpreter.

General Carlos Romulo, who filled a return engagement as banquet orator, was even better than he was in 1943—by about 45 minutes. Despite the promotion he received in the interim (he was a colonel at the time of his previous appearance) he was outranked at the head table by General Wayne Allen, who returns to the Executive Committee as Vice President for District No. 1, a post he held

with distinction in 1936-1937. Another veteran in N. A. P. A. service is A. Grant ("Curly") Clark of New Orleans, who returns for a second term as Vice President for District No. 7.

A gracious gesture at the banquet was President Sheldon's introduction of his predecessor in office, Bob Swanton, whose 1945 convention was scuttled by the ODT with the result that he had bowed out of office before an audience of 21 instead of this year's 2,300. The belated ovation was a sincere tribute to a leader who had done a magnificent job in one of the most trying years of Association history. Bob in turn graciously introduced the 1945 Shipman medalist.

When the outgoing Executive Committee members filed onto the platform on Wednesday noon to receive their service certificates, and the new Committee was formally introduced to the Association, it was the first opportunity that some of them had had to enter the convention hall. These hard working gentlemen got away to a delayed start, on Sunday morning instead of Friday as scheduled, because of railroad difficulties, and consequently were in session almost constantly for the duration. A few of them wandered hopefully into the exhibition hall at 12:30 for a look at the Inform-a-Show, but found only a shambles of packing cases. You never saw anything break up so quickly and thoroughly after the 12 o'clock whistle blew.



Michigan Avenue was a lonesome place along about 5 o'clock on Wednesday afternoon, for the few survivors whose reservations were on late planes and trains. The unusually large number of delegates who had made the trip by auto made a quick getaway to take advantage of the daylight hours. And the weary Chicago members, who had done a perfect job as hosts to the convention, were either toiling over the accumulation of work at their own offices, or, more likely, were taking a well earned rest at home. And so to bed.

SUCCESSFUL BUYING POLICIES IN A SELLERS' MARKET

By ROBERT C. KELLEY

Director of Purchases
Dresser Industries, Inc.
Cleveland

A six-point program to guide the
buyer in today's chaotic markets

Address at the N.A.P.A. Convention, Chicago, May 27, 1946.

I ASSUME that no one has any doubt about the fact that we are in a sellers' market. If you have, just look at our Inform-a-Show. Two of the most difficult items to procure today are prime steel products at the mill level and fractional horsepower motors. I do not find any manufacturers of these items displaying their wares here—nor do I find any other scarce items such as industrial textiles and many others in the same category. I might also mention containers and paper, even though there are two container manufacturers and one paper producer in the Show. They are to be congratulated for their farsighted sales policy. They are smart enough to realize that sellers' markets do not last forever.

In any long-range buying program, one of the basic principles which has been followed successfully in the past is the policy of "buying the market down." The best illustration of this goes back to the days of free markets when the commodity exchanges were operating and there were no governmental restrictions. The crude rubber market was a good example of this. Successful buyers of this commodity kept in close touch with the market either by having commodity tickers in their offices or using telegraphic service to obtain up-to-the-minute quotations. They accumulated their requisitions for tonnage required and when the market declined they started to purchase, increasing the quantities as the market dropped. When the market advanced, they stopped buying. In this way they accumulated a good average price which in the long run would be below the market. They avoided the risk of running out of material while wait-

ing for the market to hit bottom and were never in the position of having to bid for supplies when it was near the top. "Markets always look strongest at the top and weakest at the bottom" is a good thing to remember.

Of course, this method of buying crude rubber is no longer applicable. With the advent of our synthetic industry (which I hope we never lose) and with the natural rubber plantations getting back into production, this is one item where there is ample supply in sight, and probably we will never again see the wide fluctuations in prices which plagued this market for many years.

But the basic principle illustrated here is still good; namely, when the market does down, *buy more*. When it goes up, *buy less*. Where does that find us today? We are in a rising market, a sellers' market. The relaxation of OPA restrictions, higher labor costs, coupled with shortages caused by strikes and the general bogging down of reconversion, have created a very tense situation which has disrupted the normal processes of buying and selling as we have known them over the years. We also have the problem of upgrading, which is hidden inflation, if you want to call it that, as many of the low and standard grades of materials are no longer available.

What should we do? The only sensible answer is to buy carefully and cautiously for **known requirements only** and from your best sources. Whether we like it or not, most of the prime sources of materials in this country have a selected customer list upon which will be found the names of those concerns who were regular customers in a prewar base period,

such as 1939, 1940, or 1941. They are allocating their production among those customers, most of them for limited periods ahead, say 3 to 6 months. As long as this situation exists, it does not do any good to shower them with orders in quantities that they cannot handle and for deliveries beyond the point where anyone can figure with reasonable accuracy what their requirements are going to be. My advice, therefore, is buy your minimum needs and keep up your trade contacts. By this means, you stand the best chance of getting your share of the supplies when they are available.

Another recommendation, which is closely correlated to careful buying, is realistic scheduling. We all have seen our best production schedules disrupted and thrown out of balance by strikes, labor shortages, and material shortages of key items. When this happens, you will be doing a service to industry in general if you will reschedule promptly after you have exhausted every means within your power to break the bottlenecks. And don't forget that the 45 day inventory limit is still in force. Many producers today are convinced that buried in their huge backlog of orders are many duplications which will show up when deliveries are offered against them.

The second step in developing a successful buying policy in a sellers' market is to simplify and standardize. One lesson that the war brought home to all of us is that the way to economical production is long runs of standard materials. This makes for better quality, more uniform products, and cuts down the nonproductive time required to change set-ups. Renegotiation pro-

ceedings on war contracts have brought this fact out many times. Manufacturers of materials for war contracts with large orders for a single item were in many cases able to produce at a much lower cost than their estimates. We should all use our influence to eliminate "the cats and dogs" which have crept into our production over the years.

The third point in developing a successful buying program in a sellers' market is to explore the use of substitute materials. By substitute I do not mean inferior. With the technological advances which have occurred during the war, there are many materials pressing for entry into the market which will do the job better and cheaper than the materials formerly used. I know that it takes time, patience, and a little bit of selling to your own organization to effect the use of these materials, but the effort is worth while. By promoting the use of the new materials, you are indirectly aiding the national economy by relieving the pressure on the items which are so badly oversold. Sometimes the first cost may seem high but by encouraging the use of the new article, you are aiding their producers to get their volume up to the point when the cost can be lowered. Chart the prices of new, synthetic materials which have come on the market. The trend is always downward. What better weapon against inflation have we?

The fourth point in my recommendations also presents many difficulties. It involves the purchase and use of surplus government material. It is unfortunate that the governmental system of red tape, priorities and preferences has tangled the whole procedure in a mass of confusion which makes it very hard to do business with the Government. No one quarrels with letting the veterans and our city, state, and county governments have first crack at it. But we have only to look at the figures to see how little material has been moved. And right now is when it is badly needed to bridge over the gaps of shortages, much of it is still in the hands of the armed forces, obviously surplus but not yet declared. Despite your disgust and discouragement, which I know you must feel about the bungling mess of surplus disposal, let's keep plugging and hammering away to pry it loose.

The fifth point that I wish to emphasize is that sellers' markets do not last forever. Eventually they change to buyers' markets; and, furthermore, this change will occur

before most of us are aware of it. This is clearly evident in many specific cases from the industrial history of the last thirty years. Sellers' markets end behind the scenes. Sometime within the next few years, when the productive capacity of this country is utilized to its capacity, this sellers' market will end. Let us hope it does so in a more orderly manner than it did in the twenties. A sensible buying policy now will prevent a bust later.

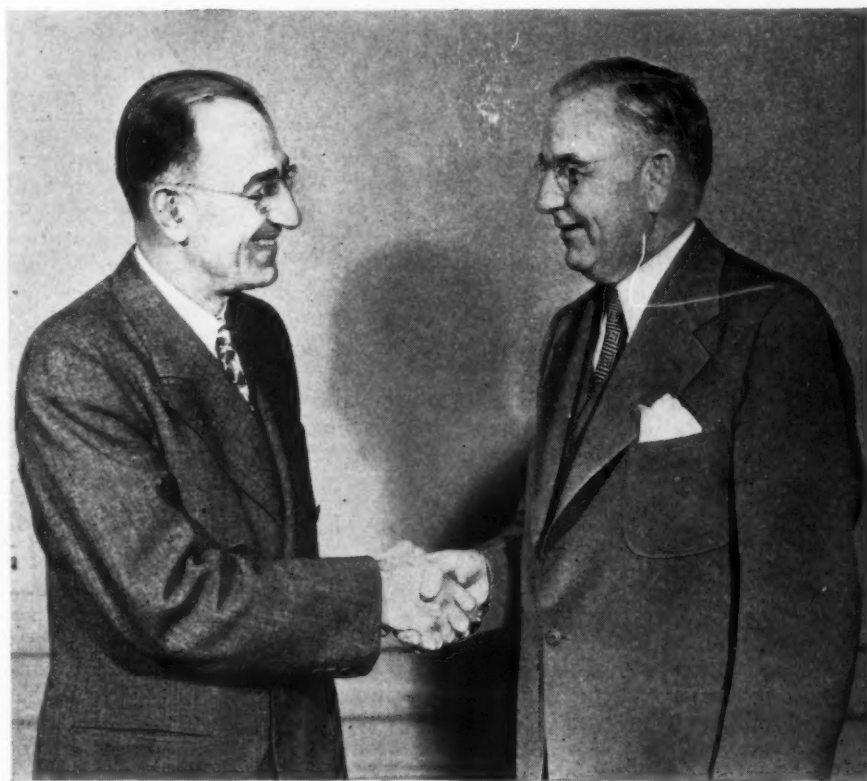
The sixth and final point that I wish to make is, watch for exceptions to the trend; don't lose the prerogatives and opportunities that are yours by virtue of your job, just because today's market is in a chaotic mess. Let me give you two current examples. All of you who buy steel know that after the settlement of the steel strike OPA granted a general steel increase. One of the items on which the ceiling was raised was tin plate, advanced \$5.00 a ton. Yet under the date of April 22, 1946, *Steel* magazine in its market report says "With the exception of roofing ternes and full-finished black plate for use other than containers, most tin mill products are being invoiced at old prices." Why? Because one of our larger users, last December, made a contract for their 1946 require-

ments at the old price without an escalator clause. Competing mills had to follow. As a result OPA comes out with this one: "Resellers of tin plate may not include in their maximum prices the amount of an increase granted at the mill level on March 1, 1946 (Amendment 15 to Revised Price Schedule No. 6)." The trade report goes on to say "OPA has been advised that producers have not raised and do not intend to raise, their ceilings on tin plate and there has not been any cost increase incurred by resellers."

Also in the *Wall Street Journal* of May 8, 1946, buried in the fine print we find the following, "The XYZ Company recently received some price boosts from the OPA. The advances meant little as the industry as a whole is operating at lower prices than permitted by the ceiling. This business is highly competitive."

Old Man Competition still seems to have a breath of life in him. Let's keep him going.

So as we ride out this storm, let us strive to avoid the fate which the Bible describes at the Fall of Babylon in Revelation 18:11. "And the merchants of the earth shall weep and mourn...: for no man buyeth their merchandise any more."



Hats off to the past; Coats off to the future!

President-elect George Aljian of San Francisco takes over the leadership of N.A.P.A. from retiring President Charlie Sheldon of Boston, proving that Kipling was wrong when he said that "East is east, and west is west, and never the twain shall meet."



PURCHASING PERSONNEL Selection and Training

Specialized training programs in purchasing are essential to keep the department at high efficiency

Here is the experience and plan of one representative company

Address at the N. A. P. A. Convention, Chicago, May 29, 1946.

By **STANLEY W. MacKENZIE**

Director of Purchases
 United States Rubber Company
 New York

WAR created a need for production. Industry responded to that need, by performing miracles. This accomplishment was made possible largely because of effective training programs throughout all branches of industry.

Our profession must meet the challenge of modern efficiency by instituting training programs if it is to maintain its position in the field of business. If anyone is doubtful of the need for trained personnel in his purchasing department, he has only to investigate his company's policies with respect to other departments. He is sure to find that the engineering, legal, sales and other departments are all staffed with people with special skills.

Our approach to the subject is based on recognizing the importance of the individual, with the conviction that a company's ultimate success is dependent upon the collective abilities of its personnel. At United States Rubber Company we instituted a training program in 1937. At the start it was not perfect, even for our own needs. But through experience in its operation we have learned a little about training and a lot about our own profession.

The first step in setting up a training program is to determine the needs of the department. Factors in this analysis will include the following:

What are the replacement needs, present or within the foreseeable future?

What expansion of the department do we contemplate?

Have we logical purchasing sections for handling of various commodity groups?

What are the educational or technical requirements of the various purchasing sections?

These and other questions must be answered before we employ new personnel. After we have determined our needs we should make a definite effort to find the right man. To hire a man merely because he came looking for a job, whether in purchasing or in any other field, has always seemed to me rather negative. If we need personnel we should aggressively seek the best. But we do not always have to go outside. For the sake of morale it is well to look first within our own department, second within other departments of our own company. As an additional advantage, men selected from within our own company will have a degree of familiarity with company products, processes and policies.

If it is necessary to look outside for new men, we must not overlook the obvious procedure of approaching the colleges, particularly those offering courses in subjects which fit our over-all program.

Screening The Material

When the right men have been selected the training may begin.

Here let me say that I am not talking about a training program for a large company. I do not think the need for training has anything to do with size. Whether a company is large or small, the purchasing people will do a better job trained than if not trained. That is just as true of purchasing as it is of engineers, salesmen, bookkeepers or any other specialist.

Obviously, the engineers of a small company should be as well-trained as those of a large company. The only difference is that the large company would have a larger department with a larger proportion of specialists.

At United States Rubber Company we have five manufacturing divisions. Each division has one or more plants. Each plant has a purchasing office, small or large depending upon its needs. The division of work between central and plant purchasing departments is allocated according to the usual considerations, such as volume, specialization and company policies. In other words, the company represents a form of semi-decentralized organization which is fairly familiar in industry today.

Training can be started best at the main office. The first few months should be regarded as the screening period. This is for the purpose of determining each man's individual aptitudes. There should be some learning situations involved, and every attempt should be made to take advantage of these. But training is not the primary purpose of this period. During this preliminary screening, the following items should be checked:

1. Willingness and ability to do repetitive types of clerical work.
2. Ability to acquire skill in procedure handling.
3. Accuracy in maintaining standards.
4. Ability to work with people.
5. Ability to plan the flow of work.
6. Desire to continue in this type of work.

At the close of this period the decision should be reached on each

man's possibilities before continuing with a long term program.

Knowledge of one's own company is of the first importance. As a basic part of the indoctrination, we believe it is essential for the trainee to know the origin of the company and the logical development of its organization. Of course the organization of the purchasing department must not be overlooked, and the relationships between the main office and the factory must be thoroughly covered to show the integration of the department within the company.

A department manual can be used effectively to ground the trainee in policies and procedures. This will be especially useful because it is always available for reference when needed, whether at the main office or in the field. The facts should all be there and they will not change with repeated telling as sometimes happens with oral instruction. Other general subjects to be covered include the function of specifications, the determination of costs of raw materials, relations with suppliers and the essential elements of contracts and insurance.

We must always emphasize the importance of teamwork. A simple example of this will be provided by the negotiation of a contract which brings together within the company the combined efforts of the purchasing, engineering, production, legal and insurance sections.

In the early stages of training we must impress upon the trainee the fact that a purchasing job is never finished. When we have completed a particular assignment we do not then wait for something else to come along. There is always the need to review procedures and study materials. An inquiring

frame of mind must be cultivated. To illustrate, show the trainee how necessary it is to be familiar with your raw materials, and in turn, with the materials which your suppliers need to produce the items which you purchase.

We must know the country of origin of our basic raw materials. Perhaps even the district might be important. We must know world conditions and understand the effect of seasonal factors on supply. Only with such basic knowledge can we interpret the effects upon our business of such factors as labor disturbance, political unrest and threats of war.

Learn By Doing

During the initial period at the main office, our trainee should spend two to three weeks in each of the commodity divisions which are charged with the responsibility of purchasing certain classes of materials. This gives the trainee an opportunity to study market conditions while he is becoming better acquainted with his own company. For instance, he will learn the major sources of supply, the trade terms and customs, and at the same time he will discover what plants use particular materials and the specifications and the methods of handling details with various plants. Equally important, by rubbing elbows he will become acquainted with the personnel of his department.

As a part of the work with the commodity divisions, much of the routine office procedure will be covered. Filing systems, vendor records, catalogue files, will be examined. Order writing, checking and payment of invoices, follow-up and expediting, will be studied and the trainee will be told the importance of contact with traffic on rates, routing and tracing of lost

shipments and the necessity of checking with the credit department before consummating a sale of surplus or obsolete material. By and large, during this learning period at the main office, all elements which comprise a complete transaction will be studied.

The commodity division head can round out the program by having the trainee attend meetings of the staff and sit in on occasional interviews with suppliers' salesmen. He will encourage the trainee to ask questions at all stages of the program and will be willing to discuss in detail the many phases of purchasing procedure.

When we consider that we are selecting and training young men who soon will have the responsibility of committing the company to contracts involving large sums of money, it is apparent that we must have a definite understanding on ethics. We must make it clear to our students, at an early stage of their training, that the principles of our profession are clear and are dictated by the highest integrity. Loyalty to the company should of course include securing full value for money spent. Such an excellent code as the Principles and Standards of Purchasing Practice as advocated by National Association of Purchasing Agents may be used as a guide.

We must not overlook the factor often called "the human element." Our trainees have been selected because we believed they had the necessary education, ambition, and the drive to carry through assignments to a successful conclusion. Their enthusiasm can be encouraged by a sympathetic attitude or dampened by wrong handling of the human factors. Our program must not be jeopardized by failure to recognize this intangible but very important consideration.



Another and perhaps the most important part of a training program consists of assignments of four to six months to the manufacturing plants. In general, our factory training program requires from one and one-half to two years.

In selecting purchasing personnel we start with the assumption that it is better to choose a man with special knowledge and make a general man of him through training, than to choose a general man. The reason is simply we are not equipped and do not have the time to teach a dozen or more specific skills. Obviously, we can't take an A.B. and make an engineer of him. These men, selected for specific skills, operate as general men at plants but are continuously available as commodity specialists when required.

How does this work out in practice? As an example, we might select a man with a thorough knowledge of textiles and then through training and experience we would expect him to learn the overall requirements of our company for this and other commodities. If our trainee is a specialist in textiles we will not immediately assign him to a textile mill. Rather he will go to a tire plant where he will learn our textile requirements from a tire-cord point of view. Later, he may go to a mechanical goods plant and a footwear plant where textiles are also used in large quantities but where the requirements are different. And as part of this program the trainee will also visit our chemical plant to complete his overall view of the company's manufacturing operations.

Plant Assignments

Thus the trainee spends from four to six months at each of

several plants with intervals of two to four weeks at the main office between plant assignments. During these intervals at the main office the trainee's progress is reviewed and his aptitude appraised by each of the commodity division heads.

The factory training should be based on the principle of on-the-job experience, with the trainee involved in work of a productive nature wherever possible. The plant training program must have the backing of plant management and the whole-hearted cooperation of the plant purchasing agents. While the overall policy is one of learning by doing, the work should be of such a nature that the trainee is allowed plenty of time for observation and study.

The plant assignment is the trainee's first opportunity to find the answer to many questions which arose in his mind during his main office training. In fact the trainee must be made to realize that these plant assignments may prove to be among the great opportunities of his career. For the purchasing department is the antenna of the whole organization. His future success and his value to the company will depend in large measure on the well-rounded and yet detailed knowledge which he acquires of his company's plants.

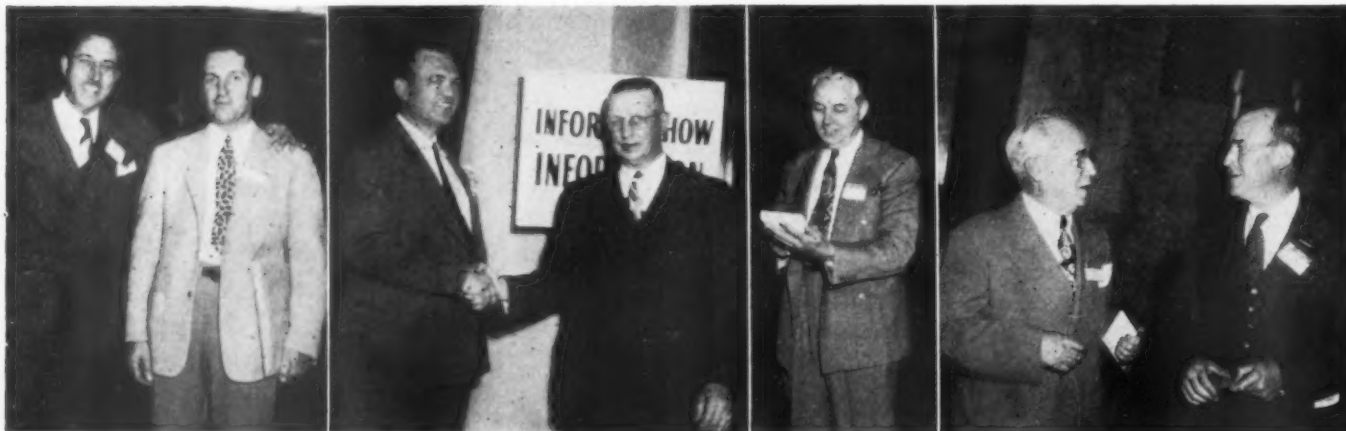
Once our trainee is established in a fixed assignment, whether at a plant or at the main office, he may not often be justified in re-visiting the factories, much as he would like to. This is his opportunity, and he should study every aspect of plant procedure as intensively as if he would never have another chance.

He must of course become familiar with the products and processes. That is axiomatic. A good student will go beyond that. He will get to know the special

conditions of each plant so well and know its people so intimately that years later he will be able to decide which of the hundreds of new ideas presented by suppliers would be of value to such and such a plant.

Arrangements should be made to have the trainee spend sufficient time with the foreman or other designated person in each department to observe all operations performed on the product. The trainee should study every step from product development through production to shipment of the finished article. His investigation should cover raw materials, supply items, and machinery and equipment at every point in the production line. A cordial relationship between foremen and purchasing departments will pay dividends. The trainee must appreciate the responsibilities of the foremen, and must learn to analyze the problems related to the processing of materials.

Visits to supplier's plants are a part of our training program. Toward the end of the training period, when the permanent assignment of the trainee has been determined, it is logical to arrange visits to the plants of suppliers with whom he will be doing business. These visits serve two purposes. First, they give the trainee an opportunity to meet the personnel of the company's suppliers and to study their manufacturing processes. By knowing our own requirements, he will notice any operations which may not be necessary for our purposes and by suggesting their elimination can bring about a reduction in costs. Secondly, these visits will permit him to compare the methods of various manufacturers of the same product and aid him in deciding the \$64 question.



N.A.P.A. EXECUTIVE COMMITTEE 1946-1947



Seated (left to right): Ira C. Jared, Sun Oil Company, Dallas, Texas, District No. 2; Garnet T. Dickson, The Goodyear Tire & Rubber Company of Canada, Ltd., New Toronto, Canada, District No. 5; George W. Aljian, California & Hawaiian Sugar Refining Corporation, Ltd., San Francisco, President; Charles L. Sheldon, Hood Rubber Company, Watertown, Mass., Past President; A. Grant Clark, McWilliams Dredging Company, New Orleans, District No. 7.

Standing (left to right): Charles M. Healey, Jr., City Purchasing Agent, Springfield, Mass., District No. 9; Wayne R. Allen, County of Los Angeles, California, District No. 1; E. G. Swanson, The Herman Nelson Company, Moline, Illinois, District No. 3; Ralph O. Keefer, Aluminum Company of America, Pittsburgh, District No. 6; James A. Cooney, International Salt Company, Inc., Retsof, N. Y., District No. 8; Robert G. Matley, Whitman & Barnes Division of United Drill and Tool Corporation, Detroit, District No. 4.

What should be required from the trainee by way of written reports? I believe a report by each trainee should be submitted monthly, or at the end of a particular assignment if less than a month. But do not prescribe the form and contents of these reports. Give the trainee freedom of action and thought. This will bring out his originality and will increase the value of the report as a yardstick of ability.

Progress Reports

The head of the purchasing department should require from each commodity division head and plant purchasing agent a monthly report on the progress of the trainee. These reports, in conjunction with the trainee's reports, will aid in an appraisal of progress and in deciding on corrective measures or new assignments.

A training program can be tailored to meet your specific

needs. And it can be made flexible to meet changing conditions. But a program alone is not enough. There must be a will to put it over. There must be a selling job within the company. Management must back the program with official support. And there must be results. For, in the long run, the plan will succeed only to the extent to which the company benefits.

Results

Our program, started in 1937, was interrupted by the war. Most of the men we employed under the training program left us for military service. This interruption, however, has compelled a dispassionate appraisal of results.

First of all, by careful selection and training, we have produced some excellent men. At one of our plants the purchasing agent was suddenly removed. Replacement could have been a serious problem, in view of wartime expansion and

the fact that our department was stretched pretty thin. However, one of our trainees was felt to be qualified for this assignment and from the day of his appointment he has justified our faith. A product of our training program, that man has proved himself of definite value.

Another trainee, while still serving his apprenticeship at one of our plants, noticed that a certain fabric caused trouble in an assembly operation. Being a textile specialist he undertook to investigate the matter and eventually the problem was solved, although until this time the condition had been accepted as inevitable.

Of the trainees who left us for military service, the percentage who have returned to our company is far higher than could have been expected. When a training program makes better men, and when the men in turn demonstrate their loyalty by a desire to stay with the company, the program is a success.



MATERIALS MANAGEMENT TODAY

An outline of the scope of the materials problem in an industrial operation, and the type of organization necessary for handling this function efficiently

Address at the N.A.P.A. Convention, Chicago, May 27, 1946

WE are living in a day when many of the rules seem to have either been set aside, or knocked out altogether; when ideas which may be viewed as screwy are prevalent; and when many groups are trying to make their own rules. It is high time someone had nerve enough to get up on a high point of vantage and yell: "Stop! Look! Listen"! And this Convention has done just that. Here we are at a session the slogan of which is: Forward to Fundamentals. Sounds sensible, doesn't it? And when compared with such statements as have emanated from all too many governmental agencies, it is *so* different! Surely we will be starting on a solid and secure foundation when we begin with fundamentals. There never was a good athletic team of any kind, which had not previously been well grounded in the fundamentals. And business is no different.

In respect to the subject of Materials Management Today, we are sure that first word is clear to all. Materials, in this case, means all the items and/or commodities which are purchased to meet the needs of construction, operation, repair and maintenance in the business. That last word in the subject is also quite clear; today is now — under present conditions. What about that other word — Management? Mr. Webster of dictionary fame says that management is the "act, art or manner of managing, controlling or conducting." Is that your idea of management? No man has been in business as long as most of us who, from his own observation alone, does not have a pretty good insight into the wide variety of ideas of management, what and how it acts and does. What else did Mr. Webster say about management? "The skillful use of means to accomplish a purpose." We like that. Or, as the M. C. of Information Please says,

By **R. L. VAN CLEVE**

General Purchasing Agent
Carnegie-Illinois Steel Corporation
Pittsburgh

"I'll take that." We like it because it injects—and by inference emphasizes—the personal element in management. It personifies the word and enables us to get quickly to the point.

If you are going to attain successful Materials Management Today, you must do at least three things. First, you must possess a clear and complete understanding of the problem. Second, you must decide upon an intelligent organization structure specifically aimed at an efficient solution of the problem presented. Third, you must choose personnel wisely to insure a capable, smooth-working and co-operative group. Thus, you give life to the organization structure, which will in turn provide you the means to be skillfully used to accomplish the purpose.

Scope of the Function

Now that we have a definite statement of our subject, we can proceed with the discussion. First, what is the problem? The problem is to place purchase orders with satisfactory sources of supply, and sufficiently in advance of actual requirements, to maintain a reasonable inventory status and yet meet the delivery situation as it relates to the items of interest, and the operating needs. We recognize that many kinds of business are represented by the membership of this association but fundamentally our problems are the same. From a purchasing viewpoint the steel business is rather broad in scope because the average steel mill inventory will include from eleven to nineteen thousand items, depending upon the nature of the operating units. In Carnegie-Illinois the pur-

chasing organization includes 125 people and we place about 275,000 orders per year.

The purchasing function acts, of course, in a dual capacity with its relations to the operation of the business on the one hand, and its relations with the trade or suppliers, on the other.

Thus our knowledge of the problem involves familiarity with such matters, as:

- I. Governmental regulations,
Governmental agencies, Governmental surpluses
Sources of supply
Inventories
Market conditions, surrounding the availability of items to be purchased
Progress and development by the manufacturers of interest
Competitive commodities
Patents
Substitute materials
Changing delivery situations
Operating requirements — the many items—their uses, rates of consumption, items subject to wide fluctuation in quantities required
Trial uses of new materials
Testing purchased materials for quality
Transfer of usable surplus inventory
Disposition of obsolete inventory
Standardization
- II. Operating data as to best performances
Maintaining a competitive condition in fields of manufacture in which purchases are regularly made
Advance buying in anticipation of price increase—as related to amount of money tied up—for how long a time, and possible extra expense to accommodate a temporarily excessive inventory
Combining purchases by several departments in the

- plants to accomplish volume and minimize purchases of LCL quantities
- Determining the most economic purchase of items which involve high labor cost to dismantle equipment for installation
- Emergency purchases
- Preparation of purchase orders for greatest economies
- III. The preparation and use of specifications
 - Securing truly comparable bids
 - Terms and conditions of purchase
 - Escalator clauses
 - Legal coverage
 - Contractor performance
- IV. Another phase of the problem is the proper consideration of jobber purchases, subcontracts and commercial interests of the purchaser

Inventory Policy

Certainly, we need only comment on a few of the points which go to make up the material procurement problem. You have all had your many and varied experiences but some items are of general interest. For example, Inventories. Some of the factors in controlling inventories are the quantity on hand, rate of consumption, storage capacity, the market situation as it affects price, and the delivery time required to get the item. On the one hand, we should not tie up any more of the company funds in inventories than necessary to insure orderly plant operation, maintenance and repair as dictated by the rate of operations. On the other hand, the availability of a commodity will depend on the situation at the plant, manufacturing the item, its business situation, labor conditions, etc. At times, these market factors may be the more important in deciding the quantity

to buy, and when to buy rather than the immediate need. Obviously there must be close co-operation between plant and purchasing department personnel to co-ordinate operating information and purchasing information. Of course, it is a never ending job since proper action may be influenced by either or both.

There is a financial interest in inventories. There is a purchasing interest in inventories. But in its final analysis the real control of inventories is in the hands of the operating plants because only they can use up the inventories. If and when any plant has surplus material in inventory, prompt effort should be made to use it, even through substitution. It only costs more money to ship the surplus to another plant, and under normal conditions, outside sale is not likely to realize the invested cost.

It is not good purchasing to have "all your eggs in one basket," and it may not be a healthy condition to have a definite continuing buyer-seller situation. In other words, another of our problems is the testing or trial of new products or materials, the development of a special material to meet a specific need, and in general, the importance of factual operating data. Since we are interested in making the most economic purchase, we are always looking for a better and higher standard. This attitude is not only good purchasing, but it promotes competition, keeps 'em on their toes so to speak, and stimulates development and progress. Factual operating data will show the results secured in using different makes of a commodity, and will contribute to greater intelligence in placing future purchase orders, since decisions can be based on facts.

Another point which deserves

your thought is standardization and the development of specifications to cover many of your purchased items. "There's gold in them thar hills!" Standardization is not a study that can be started today and completed six months later. Rather, it is a continuing study and desired results will evolve as the effort progresses. Many fields in many kinds of business activity lend themselves to this effort. The possible economies—both from a purchasing and an operating viewpoint—are very attractive, including minimum spares, and fewer purchases to be made. This subject also tends to increase competition for the business since the larger volume makes it the more desirable. This in turn tends to production of a higher quality by the interested manufacturers, and at the same time the larger volume tends toward a lower price.

Speaking of specifications as related to the engineering field of construction or mill equipment, the preparation of them is, of course, primarily an engineering assignment. There are, however, certain aspects which are important from a purchasing viewpoint. In the first place, the specification should not be written around the product of any one manufacturer, if there is to be given equal opportunity to bid. We think you will agree with us that an obligation of the purchasing department is to be fair at all times, and impartial to a fault. Another important point in specification writing is to keep clearly in mind the status of the supplier. Is he to be held responsible for the equipment when installed, its performance, etc.? If so, he will rightfully insist on having much to say about the design of that equipment. If you intend to tell the vendor just how to build the equipment, then you can only hold him responsible for



quality of material and workmanship in erecting the equipment of your design.

A specification should clearly state the scope of work to be performed, and in the case of equipment the functional capacity or the general over-all performance desired. Every bidder is entitled to have complete information, and all the terms and conditions *before* he bids. Whenever you change your specifications after a job has been placed, you simply open the gate for extra charges, and if you reduce the amount of work to be done, you will probably receive a cancellation charge!

Another very important phase of specification writing relates to proper and adequate legal coverage. This requirement varies with different kinds of jobs, but serious accidents can occur on a small job as well as on a big job, so that we should guard against difficulties and possibly litigation. For example, in considering insurance policies we are interested (1) that the insurance company is a good reliable concern, (2) that all the kinds of coverage required for the job in question are active, (3) that the amounts of coverage on each of the policies involved are adequate, and (4) that the policies are worded so that the purchaser can participate thereunder to the extent that his interests are entitled to benefit. This matter of legal coverage is most important.

Now we have a problem. What to do to do with it? A preliminary analysis indicates that not even one good P. A. can handle the problem alone. That sounds like progress. So - - - We need additional manpower. (Not many months ago that would have been a bad situation indeed, with no manpower available!) But we may now proceed.

What kind of an organization setup is required? How many buyers? What supervision? We are definitely of the opinion that any time you shut the door to your office and quietly study this matter of organization structure, you will be spending your time wisely. Now we are really beginning to talk about materials management today. You may have a clear and complete understanding of the problem but it is the solution that counts.

The organization must be adequate to handle the volume of purchase orders to be placed. A minimum amount of supervision is desirable. Assignments of commodities to buyers should be specific and definite. Each buyer should be delegated authority commensurate with his responsibility and he should be entirely responsible for his commodities to the full extent of his capabilities. The organization structure should provide for detail assignments so that no buyer is doing work which can be satisfactorily performed by less qualified personnel. The organization should, of course, provide for the necessary subdivisions such as reception, mail, files, stenographic, bill checkers, invoice sorters, order checkers, statistical, etc. The distribution of space and location of the component parts of the organization should all be directed toward a consistent and progressive flow of the paper work throughout the department in order to accomplish an efficient performance of the purchasing function. The organization structure should be suited to the problem presented. Then it can be successfully defended even when operations are below normal. There are means available to adjust or supplement as required by changing conditions.

The third step is the choosing of personnel to provide the missing

link between the organization structure and the material management problem. There is no question but that the subject of personnel is paramount in any organization. Management may know the problem and may set up a sound and well conceived organization structure, but the pay-off is directly proportional to the character, ability, attitude, aptitude, personality, initiative, aggressiveness, diplomacy, tenacity, and other desirable characteristics of its personnel. Well chosen and properly placed personnel mean satisfied employees. That means less labor turnover. That means stability, better performance, greater efficiency, increased prestige—because the plants respond to better service and the trade like to do business with your organization.

There are other duties, if not obligations, on the part of management today, some of which have to do with these human relations. Material management is really fortunate in that its performance necessarily involves much personal contact both within and without the business itself. There is great opportunity to build good will, that intangible something which money cannot buy and yet every business prizes so highly. And every person in your organization should fully realize that, "A corporation may spread itself over the whole world—may employ 100,000 men, yet the average person will form his opinion of the corporation through his contact with one individual. If this person is rude, or inefficient, it will require a lot of courtesy and efficiency to overcome the bad impression. Every member of an organization, who in any capacity comes in contact with the public, is a salesman. The impression he makes is an advertisement, good or bad."





Progress is being made in surplus disposal despite unique difficulties in the problem itself and in the legislative regulations

WAA is trying to make it simple to purchase surplus items, but the greatest advantages depend on the ingenuity of the purchaser

Address at the N.A.P.A. Convention
Chicago, May 29, 1946

By **MAJOR GENERAL
GLEN E. EDGERTON**

Associate Administrator
War Assets Administration

It is no idle compliment to say that the National Association of Purchasing Agents probably has more members who are able to appraise realistically the problems of surplus property than any other group of comparable size in this country. I am sure you want to know the facts and you need entertain no doubt of my desire to present them without embellishment or prejudice.

One difficulty in selecting the facts is that most of the general statements, which are desirable in

SURPLUS PROPERTY AND BUSINESS

an overall presentation of the subject, have many exceptions that it is necessary to note if complete accuracy is to be sought. Notation of the exceptions tend to blur the picture and so I have chosen to make some statements which are only generally correct and to use figures in rounded numbers instead of precise statistics.

I should like to give you an idea of the magnitude of the surplus property disposal operation, the nature and the reasons for its unique difficulties, some thoughts on its relationship to the business of the country, and features of special interest to purchasing officers. My discussion will be confined, except as otherwise stated, to the disposal of surplus in the continental United States, and not to disposals abroad, which are not under the jurisdiction of the War Assets Administration; nor to disposals in insular possessions, which, although under policy direction by War Assets Administration are performed by the Department of the Interior.

How Much Surplus?

There is in circulation much misinformation concerning the size of the disposal problem. Figures which are inconsistent with each other are often quoted, although apparently drawn from reliable sources. Such inconsistencies are due, in part, to the constantly changing status of the facts, so that figures correct as of a given date

are soon superseded by later ones, and in part to the use of different criteria by different statisticians.

For the purpose of indicating the size of the task and rate of progress, figures based on original cost are the most useful. They are the figures used by the owning agencies for stating the quantities of surplus declared and disposals on the same basis show how much has been done and how much remains to be done. Although there are five disposal agencies, the War Assets Administration disposes of 90% of the total war surplus in the United States and, consequently, its statistics reflect the general situation well.

Here are a few of the most significant figures, stated in rounded numbers:

On hand for disposal—13 billion.

Aircraft (non-salable)—5 billion.

Aircraft (probably salable)—2 billion. (Includes 30,000 aircraft and quantities of parts and accessories).

Consumer Goods—1 billion.

Producer Goods—2 billion.

Real Estate (including industrial plants)—3 billion.

New acquisitions become available for disposal currently at a rate of \$1 billion per month.

Estimates of the probable total surplus to be declared are liable to large error because the long range stock position of the Army and Navy is subject to policy determinations which will change from time to time. When surpluses are



known, they are usually declared promptly. Forecasts must, therefore, be chiefly in the field of intelligent conjecture. Actual declarations of surplus will continue for a long time, as the effects of changes in general plans, improvisations to conform to legislative requirements and limitations (including those of appropriations), international relationships and other presently unpredictable factors, influence the action of the Army and Navy in respect to stocks they should retain. The best prophecy seems to be that the total surplus will be about double that which has been declared today. The division among the major categories will follow the same general pattern as in the past except for marked decline in the aircraft category, both salable and unsalable, a relative increase in real estate, and in both capital and producer goods a substantially greater proportion of articles primarily military in character and consequently less readily salable than the goods previously declared surplus.

Difficulties and Progress

The progress made to date is creditable, particularly in view of the many changes that the disposal agencies have experienced prior to the establishment of the War Assets Administration on March 25, 1946. No appraisal of the results accomplished nor of the forecasts for the future should be made without recognition of the extraordinary provisions of the Surplus Property Act of 1944 and amendments, which are the governing legislation under which the work is carried on.

The Act sets forth twenty objectives, which conflict and overlap among themselves. Most of the objectives are praiseworthy but they do not point to a definite goal or furnish much practical guidance.

Instead they provide some plausible grounds for almost any complaint that might be made concerning the disposal of surplus property under this legislation. The other provisions of the Act contain a number of restrictions and directives which are susceptible to varying interpretation so seriously that President Roosevelt expressed doubt of its practical application when he was called upon to sign it. Further complications have been added by the recent amendment, which is primarily intended to give a priority status, instead of a mere preference, to veterans of World War II in the purchase of surplus property.

This is not to say—although it has been said, on high authority—that the law is unworkable, but it is difficult to administer in a businesslike way; and its own provisions provide the principal bases for the current dissatisfaction with the results obtained under it.

Notwithstanding the difficulties alluded to, \$3 billion of surplus has been disposed of with a return on the salable material of about 45% of original cost. The rate of disposal is currently one-half billion a month and steps are being taken to increase greatly the number of sales outlets by means of sales on the site and also to increase the disposal rate at existing outlets. An increase in the total rate of disposal to one and a half billion a month is the goal for the near future.

A Unique Business

I have referred to difficulties which stem from the governing legislation, but there are, also, other features of surplus property disposal which distinguish it from all ordinary commercial operations. It is neither merchandising nor liquidation, but falls somewhere between the two. The enterprise differs

from merchandising in that the selling agency has no considerable influence on the quantity, quality, condition, location, method of packing, time of offering nor any other of the essential factors by which merchandising is ordinarily selected. There is no possibility, except by fortuitous chance, of replenishing the stocks of articles which are the most readily salable or which produce the highest return, nor of avoiding additions to the most undesirable stocks. These facts are sufficient to show the wide difference between this activity and commercial merchandising.

The task would be essentially a mammoth liquidation except for the objectives and other provisions of the Act. They have effectively removed most of the elements of liquidation, in an effort to promote the interests of economy in the Federal Government, to extend economic advantages to state and local governments, to provide benefits for veterans, to augment public health and educational activities, to encourage, support and maintain small business ventures whether established or to be established, to stimulate full employment, to discourage speculation, to avoid unfavorable impacts of the sales of surplus property on business, and in general to promote the welfare of the Nation and its people. These are worthy objectives, but to serve them effectively through the sale of surplus war property does remove it far from the fields of either merchandising or liquidation and leads it through strange uncharted territory towards an undetermined destination.

The relationship of the disposal of surplus property to ordinary business is obscured by the attempt in the legislation to mitigate the unfavorable effects that might re-



sult from the rapid release of large quantities of war surplus. It is significant that among the twenty objectives of the Act, expeditious disposal is No. 18 and obtaining a fair return for the property sold is No. 20, and the statement of each is even hedged with reservations which emphasize the primary force of the other objectives.

It is my belief that the subordination of these two objectives, which would be of primary importance in either liquidation or merchandising, stems from the anticipation (and very reasonable anticipation, too) of conditions quite different from those that have been encountered since the end of the war. It was expected, no doubt, that industrial production would be resumed full blast as soon as the war demands were eased. It was apprehended that the principal deterrent to full industrial employment would be encountered in the rapid release of war stocks which, vast as they are, were then greatly overestimated. It was probably regarded as a cushion to their impact on commercial industry to have them released deliberately and at prices generally in line with the costs of new production. The latter would then develop at a pace not inconsistent with its probable long range rate for the future and the articles produced would find their markets in moderate competition with the sale of the war products.

Sales Are Retarded

If this was the prospect, it is far from realization. The sale of war surpluses has been retarded, of course, but the output of commercial production has been retarded too. In nine months since the end of the war, few of the major industries have regained their normal peacetime production rates and a sellers' market prevails in almost every line of goods. It is to be hoped that these circumstances will improve soon and thereafter will conform more closely to those expected when the Act was written. But the restrictions imposed upon the disposal of surplus property have retarded sales during the period in which they could have been made to the greatest advantage, and so have increased the impact which must subsequently be incurred by reviewing industry.

There is, to my mind, grave doubt of the wisdom of the trying to mitigate the effect of surplus property sales by inflexible restrictions laid down long in advance. One reason for that doubt has just

been explained. Another is that stocks of goods known or believed to exist and bound to be offered for sale at some future time may have psychological effects more serious than any of the practical effects that could result from selling the same stocks at once.

Sales Methods

As purchasing officers, you are more interested in how this surplus property can serve your needs than in any theories of mine concerning its wisest distribution. The sales of surplus property by War Assets Administration are made in, or under, supervision of 33 regional offices, and their sub-offices. The regional offices and sub-offices at present sell largely from their general inventories by specially advertised sales, which for a decreasing number of categories are on a nation-wide basis. The terms and conditions of the sales are set forth in the advertising. Increasing emphasis is being given to sales at the sites of large accumulation of surplus property, such as Army and/or Navy depots and camps, posts or stations which it is proposed to vacate. In such sales, the dates for offerings to the several categories in the hierarchy of purchasers are established; and following the completion of the sale to one priority group, the sale to the next priority takes place, as set forth in the announcement of the sale.

Machine tools and electronic equipment and supplies are offered through agents of the kind who normally handle such products from commercial production. Aircraft, aircraft engines and aircraft tires are sold directly to the public by the Office of Aircraft Disposal in Washington. Components and spares for aircraft are sold on consignment by commercial agents. Real property is sold by sealed bid or by negotiation as circumstances of particular properties may dictate.

Pricing Policies

Ordinarily, offerings of personal, or movable, property, if new and in good condition, are made at fixed prices. Used articles and articles in poor condition are frequently offered for sale by some form of competitive bidding.

Sales are pointed at the levels of trade in which like property is normally handled commercially, and prices are established for the levels of wholesalers, large and small retailers, following generally the normal commercial practice.

Industrial users are recognized in the trade channels at the levels accorded to them in commercial practice as nearly as that can be determined. Maximum and minimum lots for any purchaser may be established according to trade practice and requirements of the Act in respect to broad distribution. In most lines and circumstances surplus property is not sold in lots suitable for a purchaser at retail.

Filling Orders

The wide differences between the surplus property operation and ordinary merchandising have been pointed out. It is scarcely in order to undertake either to acknowledge or to refute criticisms which have been leveled at disposal agencies by persons who have failed to recognize those essential differences. However, it does seem desirable to take cognizance of delays that have occurred, and are still occurring in too many instances, in filling orders that have been received and accepted.

Diligent effort is being directed by the War Assets Administration to improving this situation, but it should be recalled that in the ordinary case, the property is warehoused, handled and shipped by the owning agency to whom the shipping instructions are issued after a sale has been made. Furthermore, many of the regional offices, for a variety of reasons, have not been adequately staffed for the work they have to do. In all these circumstances, the impracticability of giving the kind of service than an efficient mercantile establishment would be expected to render should be recognized. Notwithstanding all the improvements that have been made or are in prospect, such standards of merchandising are not likely to be attained in the disposal of surplus property.

Industrial Buyers

Owing to the priorities established by the Act, ordinary industrial users are not in a very favorable position in the purchase of surplus property. Owing to the manner in which the disposals must be conducted it is likely to be impracticable for a purchasing officer to purchase what he may want exactly when he wants it. Offerings must be made by the War Assets Administration as promptly as possible after surplus property is declared. A Regional Office cannot handle any considerable number of special requests for items which are

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THE term "escalator clause" is really a new name for the old, familiar "sliding scale" or "price adjustment" clause. It is used under conditions when a firm price is either not obtainable or not desirable, in order to adjust the price of a product so as to reflect changes in one or more of the cost elements which comprise the price and which develop between the time the order is placed and the material is shipped.

These escalator clauses are somewhat similar to escalators, that device used for getting from one floor to another. You no doubt have ridden on escalators installed in some of our prominent buildings, such as the Pentagon in Washington, Radio City in New York, and Marshall Field's here in Chicago. As you know, the basic principle of these escalators is that of a continuous moving stairway. During half of their cycle they are going up, and in the other half they are going down.

The application of escalator clauses in purchasing is quite parallel to that of the escalator. During that part of the business cycle when prices are going up, manufacturers are inclined to be unwilling to assume all the risks of a rising market and use escalator clauses to pass these risks on to us as buyers. Likewise, during the other half of the business cycle when prices are falling, we buyers use the same escalator clause to take advantage of the manufacturer's lower costs.

Varied Market Conditions

Until recently, the use of escalator clauses by buyers has been largely confined to declining markets. For example, in the early Thirties when electrolytic copper was dropping in price, it was customary to buy weatherproof wire at a base price per pound with this price to be adjusted downward a fixed amount for each 1¢ decrease in the electrolytic copper market. Also at this same time, lead covered cable was usually bought at a base price which was subject to downward revision at fixed rates for each 1¢ decrease in the lead market as well as each 1¢ decrease in the electrolytic copper market.

In previous rising markets, however, buyers tended to avoid the use of escalator clauses in favor of fair firm prices. The firm price generally represented a smaller increase than would be reflected through the use of an escalator clause which provided for proportionate increases in material and labor costs because

ESCALATOR CLAUSES

The principles of doing business on a sliding price scale, types of clauses in current use, and how to buy under this system to minimize risk factors

Address at the N.A.P.A. Convention
Chicago, May 27, 1946

By FRED A. COMPTON

Purchasing Agent
The Detroit Edison Company



C. F. Ogden, Assistant Purchasing Agent of The Detroit Edison Company, read the paper that Mr. Compton had prepared for the convention, due to Mr. Compton's unavoidable absence from the Chicago meeting

(1) the manufacturer improved his operations to obtain a lower overhead in order to retain his relative competitive position; (2) Increases in raw material costs were offset by accumulation and use of low priced inventories; and (3) labor and material economies resulted from increased production normally attendant with this market.

The problems of today, however, are different from our previous experiences with declining or rising markets. We now have an artificially controlled market with strong potentialities for a run-a-way situation. It is, therefore, imperative that the buyer protect himself by means of devices appropriate to each buying situation. These devices are (1) a fair firm price, or

(2) an adequate escalator clause which is fair to both the buyer and seller.

Fair Firm Prices

Fundamentally the buyer's best protection is a fair and firm price. Even today, this fair and firm price is still his best bet. However, each firm price must be analyzed to insure that it does represent a fair price to the buyer.

Under today's conditions of uncertain labor and material markets, the Purchasing Agent has a hard time finding vendors who are willing to offer firm prices. When the buyer insists on a firm price in today's market, the vendor will be forced to include adequate allowances to compensate for all of the unknowns. To repeat, insistence on a firm price under today's conditions means that the buyer pays for all of the possible risks which *might* develop.

Most vendors today are offering or accepting orders on the basis of prices subject to upward adjustment. Under these conditions, it is the buyer's responsibility to insure that the escalator clause used to provide this adjustment is an equitable one and passes on to the Purchasing Agent only the increases in cost which *actually* take place.

Items Under OPA Control

Let us consider for a moment two typical illustrations of price problems confronting today's buyer. First, let us examine the situation which is most prevalent, where a vendor conditions the acceptance of an order with the statement "the price will be that in effect at time of shipment."

From the buyer's point of view, what is unfair with this proviso? For one thing, it does not relate or tie the billing price to the actual cost increases. In the second place, it permits the billing price to represent arbitrary and perhaps unwarranted increases; and thirdly, if accepted by the buyer, it obligates him to pay whatever price the vendor establishes.

It must be kept in mind that this prevailing price clause is generally used with products which are now under OPA control, and the assumption is that this control will be in effect at the time of delivery. However, there is no assurance that this will be so. This point is particularly important since deliveries no longer are of the customary 60 to 90 day maximum, but are instead from 9 to 12 months and even long-

er. Keeping in mind the foregoing, it behooves all of us to beware of the unethical vendors who would be prone to take unfair advantage of this clause as soon as price controls are removed.

The usual protection against unwarranted increases in price, in a case of this kind, has been the inclusion of a cancellation clause. However, in today's market such a clause does not provide the normal amount of protection. This is due to the fact that as backlogs increase for the industry, the vendor may be inclined to unduly advance his price, knowing that if the buyer exercises his cancellation privilege, spot deliveries cannot be obtained and therefore the buyer has to either pay the price or forego deliveries.

The solution to this problem is the working out with the supplier of a realistic escalator clause which is mutually satisfactory. Such a clause will be considered after we take a look at the second problem confronting today's buyer.

Items Not Under OPA Control

The second problem confronting today's buyer is the case where OPA price control does not exist. If a firm price is insisted on by the buyer, what are the risks which the vendor must assume? Let us take as an example a requirement for special truck bodies scheduled for prompt delivery. Sheet steel, plywood, wiring, special tools and so forth are required for its fabrication. The manufacturer of these bodies in normal times would be able to contract for each of his raw material components at a firm price, and in turn would quote the buyer a firm price. Today, however, he has no means to cover his raw materials on a firm price basis, even in the case of those components which are now protected by OPA

price ceilings. Neither he nor his suppliers know for a certainty that prices of these raw materials will not increase before they can be delivered to him. Likewise, his own labor costs are an uncertainty both with respect to any further increases in hourly rates and also to the efficiency of his labor. Therefore, if the buyer insists on a firm price, the manufacturer must assume the most adverse conditions for each element of his cost and set a price to reflect this contingency. This, of course, means that the buyer pays for all of the risks which might be realized.

If inspection of the price quoted indicates that provisions for all contingencies have been included, the buyer should investigate what the price would be on the basis of including an escalator clause. Such a clause should limit any increase in price to only those contingencies which were actually realized. The total price on this escalator clause basis, therefore, should be lower than the firm price as indicated above since the vendor's estimate of possible increases were naturally on the high side.

Effective Use of Escalation

Since the answer to today's price problem is usually an escalator clause, the question naturally arises as to how effectively are we, as buyers, utilizing them. Information that is available indicates that the bulk of us are passing up some excellent opportunities to effect savings. In our own operations we take a rather critical view of most escalator clauses that are proposed by vendors. As a result we continually have the salesmen comment that other buyers have raised no questions concerning their clause, but rather take them as a matter of course. However, we have found

that it pays dividends to assume this questioning attitude.

For example, a manufacturer bid on some small turbines on the basis of price to be that in effect at the time of delivery. A counter proposal to adjust the price based on the general type of escalator clause, providing for modifying the price to reflect changes in major material and labor costs between the date of the order and time of manufacture, to the extent that each of these costs was represented in the quoted price, produced the following results: (1) The manufacturer indicated that other buyers were not objecting to his escalator clause. (2) The manufacturer decided that implementing our clause might require an objectionable amount of work and to eliminate this, he countered with a fair and firm price. Actually, this price was lower than we had previously paid due to the fact that the manufacturer had changed his operations during the war from an individual job basis to a production line operation and these savings were passed on to us. However, I would like to point out that since this deal was closed, material and labor costs have already increased 18% with good prospects for still higher costs before the turbines are delivered. These increases would have been added to the price if we had not closed at a firm price, based on our insistence on a fair escalator clause.

What Clause To Use

The degree of consideration given to escalator clauses and the extent of their use will, of course, vary with a number of factors, such as: (1) the relative importance of an order; (2) the need for a close control of price increases; (3) the need for knowing in advance the maximum amount of any possible



increase; (4) integrity of the supplier; (5) willingness of the vendor to accept the buyers' clause; (6) implementation of the clause.

The relative importance of orders varies considerably. For those ordinary orders which comprise the bulk of our purchase order volume, it probably is satisfactory to use the prevailing price clause (price to be that in effect at time of shipment) when purchases are made from reputable vendors. The buyer can usually rely on the integrity of these concerns to obtain the necessary fair dealing. For those orders which are significant, however, from either a dollar point-of-view or from that of the importance of the material, the buyer should examine all clauses offered by the vendor to determine whether they furnish him adequate protection. In most cases experience indicates that these vendors' clauses do not fully protect the buyer and it is necessary, therefore, to make a counter offer.

In certain situations it is important that the buyer retains close control over price increases. This is important when the vendors are inclined to be arbitrary and deliveries will be made after OPA control is relaxed. In other instances, a business must know in advance the maximum increases in prices which may develop, in order that they can compute their own sales costs on a firm basis.

In those situations where an escalator clause is desirable for a buyer's protection, what should it be like? I believe it will be best if the buyer approaches this problem on the basis of establishing an escalator clause founded on the premise of a firm and satisfactory understanding between himself and the vendor, rather than on a legal approach. As you know, the best deal a buyer can enter into, is one

which is profitable to the vendor and at the same time fair to the buyer. Then both he and the vendor are mutually satisfied. This tenet is equally applicable to all phases of a purchase transaction and, of course, includes escalator clauses. If the problem is approached in this spirit, the working out of any increase or decrease in price will generally be on a satisfactory basis and will be arrived at with a minimum of difficulty.

In establishing the escalator clause, the buyer generally has two alternatives today: (1) to accept the vendor's offer as is, or (2) to counter with his own clause. As indicated above, acceptance of the vendor's clause is generally satisfactory for the general run of orders when dealing with a reputable vendor. The vendor's clause, however, is usually not entirely satisfactory for the buyer's protection for large and important orders. In this case, it is the buyer's responsibility to offer a mutually satisfactory escalator clause.

Clauses in Current Use

There are many and various types of escalator clauses currently in use. Most of them, however, have been concocted by the vendor primarily to protect himself. Of course, the classic example is the one providing that the price will be adjusted to the seller's price at time of shipment. This really is wide open. Almost as bad is the one quoted by a manufacturer "The company has the right at any time to change any price in effect under this contract by giving the customer 15 days written notice before the change becomes effective." It also gives the customer the questionable privilege of cancelling prior to expiration of the 15 days. The sky's the limit for prices under such a deal or, of

course, you can start all over again to shop around for delivery.

In another case, "Prices are subject to change based on nationwide increases of wages and materials." This is wide open to many interpretations, and no doubt would result in several headaches in trying to arrive at a satisfactory adjustment. What are nationwide increases in wages and materials? How suitable are they to the immediate transaction? How can they be measured? Is the total price to be increased by the full amount of such increases or will only the labor portion and the material portion of the quoted price be so adjusted?

From the buyer's point of view, none of these are satisfactory. What kind of a clause then does he need? One answer to this is found in the four types of clauses which buyers are using. These provide for either: (1) A maximum percentage increase in price; (2) An increase in price based on a general formula; (3) An increase in price based on a specific formula; or (4) An increase based on a retroactive formula.

The escalator clause providing for a maximum increase in price generally states that the price will be either that in effect at the time of shipment, or in the event OPA control has been removed, will be the base price adjusted to actual cost increase and in no event will be higher than a predetermined maximum price which is stated in the clause.

The general formula escalator clause provides for proportionate changes (note this provides for decreases as well as increases) in material and labor costs without going into the details of arriving at these costs. It is based on a definite understanding between buyer and vendor, and has been found to be



very satisfactory. An example of this clause is as follows:

"It is mutually agreed between the buyer and seller that the price on this order may be adjusted to reflect the change in major material and labor costs between the date of the purchase order and time of manufacture to the extent each of these costs is represented in the above prices. Should there be a proposed increase, the supplier shall notify the _____ Company prior to the time it becomes effective. If a mutual agreement on the increased price cannot be reached, the order is subject to cancellation without charge to the _____ Company. In no event shall the price be higher than that permitted by a Government Agency which by law regulates prices."

The specific formula clause is in somewhat general use by vendors and is being used in connection with a variety of products including turbines and cable. This clause provides for an adjustment in prices proportionate to predetermined percentages for the labor and material portions of the prices. Further, it states the detailed basis on which these adjustments will be made. It is interesting to note that some vendors have rejected buyers' offers to use this specific formula type of clause instead of using the price in effect at the time of shipment statement. However, the same vendors have been willing to accept the general formula clause which I just referred to.

The retroactive formula is similar to the specific formula type of clause, but instead of adjusting only for price between the date of the order and time of shipment, it also provides for changes which have occurred since October 1, 1941, providing OPA control has been removed. This type of clause is quite extensively used by manufacturers in the boiler industry.

Some Important Ramifications

The use of an escalator clause should not lull the buyer into a false sense of security that the clause in and of itself will protect him. It is necessary that he give considerable attention to the clause and its many ramifications. The factors which require consideration when implementing an escalator clause are:

1. Is the base price reasonable and equitable or have some increased costs already been added in? The base price for an escalator clause should be initially considered in the same light as a firm price quotation; that is, is the base price fair? If this base is not fair, that is increased costs have already been included therein, then the buyer is in the

position of having to pay double for the increase.

2. What are the material costs as a percentage of the total product cost and what are the principal materials entering into the product? It is important to know what percent of the price is represented by materials so that the total change in price will be fair. For example, the base price of a steam generating unit is say \$1,000,000. Let's assume that materials go up 20% while the labor stays the same. Then if we adjust the price 20% the increase would be \$200,000. Since say \$400,000 of the total cost represented material, the 20% adjustment really should only apply to this \$400,000 and the price adjustment would be \$80,000, not \$200,000. It is also necessary to know what materials go into the product so that proper gage for measuring any changes in their prices can be established.
3. What percentage of the total cost is represented by labor; what kind of labor is required to produce the product; to what extent does overtime enter into the product and how will it be treated? Previous comments regarding materials are equally applicable to labor.
4. What will be used to indicate what adjustments are necessary in labor and materials? Will the manufacturers' costs be accepted or will nationally recognized material markets and labor indexes be utilized? How available and current is the data? Will the manufacturer's present inventories be considered?

If the manufacturer's cost experience is used, the availability and reliability of the data may become a problem. Also, no incentive is furnished the manufacturer to exercise adequate control over his procurement and management efforts because the buyer, in effect, is buying at cost plus. On the other hand, when market data and national indexes are used, the appropriateness of the markets selected will need careful consideration so that their price movement gives a fair picture.

As far as labor is concerned, considerable use is being made of indexes compiled by the Bureau of Labor Statistics. However, in applying these indexes, there is need for caution because they were not originally

compiled with this objective in mind, and hence do not always reflect influences which affect labor costs. Specifically, the index may change between two dates because of changes in the composition of the group of wage earners actually at work. For example, the Bureau of Labor Statistics' index for average hourly factory earnings is based on data from 90 manufacturing industries. Some of these have seasonal peaks which are out of phase with the others, but this condition is not considered in compiling the indexes. Therefore, when the hourly earnings for such an industry are relatively high and the industry is in a peak period, the overall index is unduly influenced on the high side. Also, changes in overtime payments affect the indexes of the Bureau of Labor Statistics and hence these indexes may not be representative of the situation of the particular manufacturer under consideration. These several diverse factors will have to be weighed for each buying situation and the appropriate provisions included in the buyers' escalator clauses.

5. Are indirect costs included in the adjustment and are they proper?
6. Has the decrease in productivity of labor been passed on to the buyer as an added cost to him? In this connection, it is of interest to note the policy of one of the auto manufacturers. It is to accept increased prices due to material and direct labor costs since this increment can be passed on to its customers. However, any increased cost due to inefficiency of labor will have to be absorbed by the supplier since this cannot be passed on to the buyer of an automobile. It will be the supplier's problem to offset this cost by use of his ingenuity to improve the engineering on his product or the method of producing it.
7. Are shipping and other transportation costs included in the adjustment?
8. When will prices be adjusted? To compensate for cost changes between date of order and time of manufacture; date of shipment; or will some other basis be established? Also, will it be adjusted for small changes in costs or only important ones?

As has been indicated by other

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GETTING firm prices is as important to a buyer today as it is for the seller to get protection against possible loss occasioned by unforeseen increases in basic costs.

We all know why it is difficult to get satisfactory quotations. There are many reasons. The uncertainty regarding labor is an important factor. Another is the belief held by many businessmen that the OPA act will be so hamstrung by amendments that when finally passed the agency will be crippled. This gives rise to the fear that inflationary trends would be rapidly accelerated. These fears and uncertainties plus the important fact that this is a seller's market have become barriers to the resumption of normal peacetime business dealings.

Of all professions I think that purchasing is most fully aware of what inflation can do to our economy. I think that every purchasing man is doing his utmost not only to keep prices down but to bring about a competitive market free of hampering uncertainties.

That is his job—to buy at a price that reflects both value and competition. In conforming to that basic rule the purchasing profession has become one of the best obstacles to inflation. That is so because purchasing men are realistic. They have adopted in their business transactions methods designed toward preventing inflation and chaos.

Unfortunately, not all are unanimous in the application of those methods. Some purchasing men have been stamped into action diametrically opposed to the objective of stabilizing the economy by the pressure of tremendous demand which, now unchecked by the restraining influence of war controls has boiled over into every channel of trade.

In the rush to get supplies some purchasing men have agreed to contracts which have served the immediate need but are inimical to their fundamental interest. This has been done under the erroneous impression that they are acting fairly to their sources of supply, by agreeing to protect them against possible increased costs. It is the purchasing agent's responsibility to resist this type of agreement.

I refer to the escalator clause. There are many types, and the type that seems to answer the need at the moment can very well be the most expensive in the long-run.

The escalator clause has as its predecessor the cost-plus contract. So it cannot be considered a newcomer to purchasing. It has been

DANGERS OF ESCALATION

Purchasing agents should resist the increasing trend of using escalator clauses in purchase contracts since they are fundamentally inflationary

By **CLIFTON E. MACK**

Director of Procurement

U. S. Treasury Department, Washington

Address at the N.A.P.A. Convention, Chicago, May 27, 1946

used, for example, by the city of New York for nearly ten years in buying bond and ledger paper at prices related to published mill prices.

Well, what is escalation? It is a generic term for contractual devices whereby contract prices are increased or decreased in the event of certain contingencies, according to a predetermined base and predetermined method which are set forth in the contract. Among bases for escalation are changes in actual costs of material, changes in costs of labor, or may be according to changes in published and provable price lists, and changes in government-fixed ceiling prices. Among methods of escalation are those based upon accounting analysis, upon automatically operating formulae, and upon negotiation.

During peacetime, it was used very little because there was little need for it. Today with labor upgrading the wage base and the labor situation generally upset, manufacturers are finding it difficult to determine their forward costs. So the use of an escalator contract has been insisted upon by many sellers, because its effect is to relieve them either wholly or partially of a possible loss. It is the easy immediate solution but its inflationary consequences are serious.

Progressive business executives today are becoming more aware of this situation and thus are placing more and more importance on intelligent purchasing as a means of keeping prices in check. Such understanding is based on the simple logic of past experience that untiring efforts to reduce costs and provide lower prices will result in increased production and full em-

ployment. Basically, that is what every businessman wants and it is smart economics.

What is the situation in the business world today? Except for immediate or short-term deliveries, it is difficult to get a firm price. In an effort to protect themselves as fully as possible, suppliers are endeavoring to sell on the basis of price at time of delivery. This refusal to offer stable prices has spread even to those standard and off-the-shelf commodities where it has long been the trade practice to quote firm prices. Basically, there are three reasons for this condition to exist. The most important, I think, is that this is a seller's market. A second is the uncertainty surrounding wages. Another is the shortages of materials. As a result, manufacturers, processors and fabricators cannot get a firm price from their suppliers for future delivery and therefore are having their difficulties in quoting a firm price.

Yet the practice is developing so rapidly that it is apparent certain suppliers are asking for escalation protection even though they have no special situation to justify it but are just playing safe. Accordingly the purchasing agent needs to inquire into each case to determine whether there is convincing proof of special need for escalation and that all alternatives have been exhausted. One way to overcome this situation is to buy in smaller quantities with short deliveries scheduled so that the seller is in a position to accept a minimum of contingent risks.

On the other hand, long-term deliveries of such commodities as equipment raise certain supplier hazards that are easily recognized

and if the need is urgent an escalator clause may be inevitable.

Three Types of Clauses

At present the escalator clause is used most for such long-term contracts. There are many varieties, however, some of them very bad from the buyer's viewpoint.

No consideration, for example, should be given to one which in effect says, "The prices contained herein are subject to increase without notice." That is an extreme example. Under it the contractor may arbitrarily increase price regardless of whether prices to its customers generally are increased.

Therefore, the buyer should examine all the conditions of an escalator contract in the light of the market situation and his needs. He should know what the relative proportions of labor and material are to total selling price and the methods which are to be used to adjust for changes in the event they increase. In other words, he should know the value of materials he buys.

Fundamentally, there are three types of escalator clauses, which are being used by business. One is tied to the OPA price ceiling, another to indexes of the Labor or Commerce Departments, and the third to the actual labor and material costs of the individual supplier.

The question then which confronts the buyer is, "Which is the most economical?" Insofar as a contract price tied to the OPA price ceiling without qualification is concerned, it is favorable to the seller and provides him with maximum protection. Upon examination, the reason becomes obvious. OPA ceilings are developed usually with the view to provide an opportunity for the marginal manufacturers in any given field to make a profit. Thus, actually the efficient operator, if he adheres to the ceiling price, is going to make a substantially greater profit. Competition is not sufficiently strong at present to compel him to retreat from the ceiling price and therefore, the price ceiling becomes an artificial resistant point below which the efficient operator usually will not go and below which the marginal operator cannot go.

Because this is a seller's market, many will not make an offer unless the OPA present and future ceiling price is agreed to for the period of deliveries. Their attitude is "we are going to charge

all the traffic will bear; you either buy from me at my price or you don't get anything at all." That attitude is very short-sighted because (1) it contributes to inflation, and (2) one of these days a buyer's market again will exist. It illustrates the fact that many sellers are hoarding basic commodities in an attempt to force prices upwards.

Analysis is Necessary

On the other hand, the escalator contract, which is tied to Government department indexes reflects, to a certain degree, fluctuations in the basic cost of material and labor. But the buyer must be particularly wary of the phraseology of such a contract. For example, if the contract states that total price will be adjusted by the percentage rise of labor cost as shown by the particular index agreed to, he is being placed in a disadvantageous position, for under it the seller gets an unwarranted bonus. Let us take for illustration an item which was contracted for at \$1,000 a unit. Of this total, labor amounted to \$600. Now let us assume that the labor index rose 10%. Under the contract the selling price would be increased by one hundred dollars.

From this it can be seen that the contract should be reworded to provide an increase of total price only by the percentage increase of the component. Using the same example under the rephrased proviso, labor costs would have been estimated to have increased sixty dollars, which would bring the total price to \$1,060 compared with \$1,100.

This form of contract has disadvantages in that the seller is very often tempted to overestimate the proper proportions that labor and materials have to total price. Obviously, if the seller sets 70% of the total price for labor when actually it is only, say 55%, index increases accrue to the seller's benefits.

Therefore, it is incumbent on the buyer to take more than ordinary precautions before accepting as fact, information given to him in this regard. As a guide to arriving at a fair approximation of the relative cost proportions, the buyer might consult available sources such as trade and government publications, which give for many products percentage breakdowns of the component costs. These can be used as a basis for comparing the figures provided by the sup-

plier. Armed with such information a buyer should be in a position to negotiate for the smallest fair proportions of the component costs so as to reach the lowest possible basis upon which escalation is determined.

Of course, were the indexes to fall precipitously, it would be to the decided advantage of the buyer to have accepted an exaggerated estimate of the proportion which labor and material have to total price. However, with the present situation of labor unrest and the indication that shortages will continue for quite a period, it appears likely that the indexes will continue to rise. But, when there is evidence that demand is being satiated and that labor troubles have eased, there is every reason to expect a leveling off of the indexes and even a reversal of the price trend.

Misleading Cost Basis

In using the indexes of a government department for a long-term contract the buyer should attempt to learn how much raw material the contractor has in inventory, how much is in the process of being worked, and the quantity which may be bought by him under a fixed-price contract. Obviously, the escalator clause should not be applied to raw materials in the seller's possession, otherwise he would be getting both cost protection for future contingencies as well as undue profits. It is up to the purchaser then to design an escalator provision which would exclude from the basic amount to be adjusted that part of the commodity not affected by future market prices. As an illustration let us assume that a contractor has \$100,000 of raw material in inventory, \$15,000 in the work process, and a contract calling for \$25,000 of the commodity at a firm price or a total of \$140,000 of material purchased at a definite price. Now, if the buyer were to use \$300,000 worth of the basic material, adjustments made should be on the difference—on the \$160,000, which would be subject to fluctuation. Of course, such a procedure is not often workable in practice, since few sellers are going to disclose to the buyer the amount of their inventory either being processed or in the raw state. But the theory should be applied wherever possible.

There is at least one drawback to the use of a Government department wage index as a basis for

determining escalation. As you know, such an index is calculated on wage costs in a cross-section of industry which may be located in various parts of the country. One section might have a high wage, another a low wage. One section might include overtime payments in the wage figures, another section might not. Thus, the index may change as employment in the high wage industries increases or decreases even though the man hours and the wages paid by the individual contractor remained stable.

The escalator clause which provides adjustment only when the seller's actual costs for material and labor increase or decrease might be given consideration. In designing such a provision it must be kept in mind that incentive must be given to the seller so that he is continually improving manufacturing efficiency to reduce costs. Therefore, protection should be offered him only on factors which are outside his control. And even then provision might be made to limit the amount of adjustment. Some buyers are using a combination based on Government department indexes and contractor's costs for future adjustment. The escalator clause is designed so that only the smaller increase of the two methods is absorbed by the buyer.

The main objection to the last two mentioned forms of the escalator clause is the administrative work involved in keeping accurate cost records on the part of the supplier and in verifying them on the part of the buyer.

Some Dangerous Clauses

Before discussing an escalator clause which gives the buyer maximum protection let us examine a few that have come to my atten-

tion over a period of years. Here is an old one. Watch out for it: "The buyer agrees that prices herein quoted may be adjusted upwards after delivery by the amount of any adjustment authorized by OPA."

A variation reads something like this: "We reserve the right to increase prices at the time of shipment in the amount of any legally authorized price increase not to exceed 16%."

Both clauses are undesirable. The seller flatly says, "You, the buyer, are at my mercy. My prices will be increased arbitrarily with a rise in the OPA ceiling." It is obvious that OPA action does not of necessity have any relation to the cost of the particular supplier involved.

Prevailing Price Levels

Let's take a look at this one. It reads, "This quotation is made with the conditions that prices at which it will be invoiced will be prices prevailing at time of shipment, but shall not be advanced to the extent of more than five percent. Of course, all prices will be in conformity with OPA regulations." What is the objection to that? Well, it is loosely worded and the buyer still is at the mercy of the seller. Little protection is given since the price to be paid is controlled by the contractor. It is not tied to any standard method of adjustment. It does not state that the contractor will increase his price only if costs to him have increased. It mentions "prices prevailing." What prices are referred to—his or his competitors'?

Another one which keeps the purchaser up in the air as to the amount to be paid upon delivery is the following: "Unless otherwise specified, prices quoted are our prices in effect to date. Any

advance or decline in prices prior to shipment shall be for customers' account."

That type of clause is indefensible. It simply provides that prices upon delivery will be as fixed by the seller with no yardstick at all, except the seller's caprice.

This one is a little better. It goes like this: "We reserve the right to increase the prices contained in this quotation by an amendment equal to any increases we may be obliged to pay for labor and materials over and above those in effect at the present time. Any increases in price will cover increased costs only, without overhead, and will comply with governmental regulations at the time of shipment."

Well, that one was not quite so vicious as others I have mentioned. It permits an increase in price only in case the seller's expenses for labor and material have increased over those at the time the contract was made. It gives the buyer some opportunity to check the prices actually demanded. It does not have any limit, however, as to the amount of increase. Of course, where there is a maximum increase provided, to that extent the buyer is protected.

The Buyer's Responsibility

If an escalator clause must be used, the fairest, is one that provides an increase or decrease in price according to the increase or decrease in the contractor's actual labor and material cost in performing the contract. It should include a provision that the unit price conforms to governmental regulations; that supplies contracted for shall be delivered at the agreed price even though the OPA maximum price is discontinued or suspended; that increases or decreases are restricted so as not to exceed

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THE TEXTILE AND FIBER SITUATION

Integration of producing and finishing mills, and regulations on distribution have resulted in unbalanced supply

By **HARRY C. SMITH**

Vice President
Deering Milliken & Company
New York

Address before the National Committee on Textiles, N.A.P.A., Chicago, May 28, 1946

THE present condition of the textile industry is no different than that of other industries. We are all very apt to say that our problems are very much different than the other fellow's and very much more complicated, but from what I hear, we all have our problems no matter what industry it may be. But there is one thing certain, I do not believe there have been any more changes of ownership in any field than have occurred in textiles. An article which appeared in *The Journal of Commerce* on May 17 enumerated the changes of ownership, and this article listed 110 mills, which comprises over 17% of spindleage. Under normal conditions this change would not mean anything to the customers of these particular mills, but today the organizations who are buying these mills are diverting the entire production to their own use and making customers of those particular mills look elsewhere for merchandise. They did not buy these mills because it was a good purchase from a mill return standpoint, but simply to keep a finishing plant running. It seems to be the tendency today to get into the other fellow's business.

The cause of all this disruption can be laid to war conditions where it was necessary to divert spindleage to war purposes, and OPA prices that did not give a fair return to a mill unless they went into the converting business. I know of one particular mill which did not make its dividend for three years, yet had they gone into the finishing of goods or the manufacture of finished product, they could have made a handsome profit.

There is a thought by several

prominent people in the industry that, if the ceiling were removed, there might be a sharp advance in prices but that this would be of short duration because of the fact that the price incentive would be the means of increasing production. I cannot wholly subscribe to this, as I would be afraid that prices might get out of hand. However, if we can believe all the talk about the black market, a lot of people are paying these high prices today. In 1942 we produced about 11 billion yards, which is the greatest yardage ever produced by the textile industry. There is no one who can tell what the potential yardage is if there is enough incentive, but I am very sure that it could be considerably over the 11 billion yards produced in 1942.

One of the things you would like to know is when present conditions will change so that you will be able to get what you want, in the quantities you want, and when you want them. I would like to know this myself. There is one thing certain. You will not get what you want or the quantities you want as long as we are under these present regulations. In my opinion, it is ridiculous to tell a mill what proportion of its production to distribute to a certain industry. To give you an example, we are confined to 15% on a certain group of constructions, and 25% on another group for industrial purposes. As a matter of fact, our normal percentages for industrial purposes are very much higher than these. It so happens that we produce goods for the varnished cambric trade, which go into cable tape and motor windings. Considerably more than 15% of this production is sold to that industry. We appealed this allocation but it was denied. It was necessary for the electric industry to send a delegation to Washington to have this change made, and I have since been asked by Washington to re-appeal.

It is my contention that I could not direct our competitors how to

distribute their goods without hurting their customers on essential uses, for the simple reason that they might give more or less of their production to one industry than another. If they were compelled to give out more goods for this particular use, such as say industrial users, it does not mean that the goods would get to the proper hands. I know of one case where some goods were sold to a converter who was told that these goods must go for industrial purposes, and he sold them to a buff manufacturer who in turn sold them to one of the automobile manufacturers. These goods were dyed blue. It so happened that this buff manufacturer was in my office shortly after I heard this story, and I was talking to him about buying blue buffs. He said he was also making some yellow buffs. Now as a matter of fact, in dyeing these goods, the finishing plant had taken out all the starch and sizing which is very desirable in buffs.

Personally, I believe there has not been enough cooperation between the producers of textiles and the industrial manufacturers, and I think that we are both guilty. In the first place, if a manufacturer wanted something a little off the standard, he was very apt to be told that the supplier was not making this particular fabric, and he was thanked for his inquiry. We operated on the old Ford slogan that they would sell you any color in a car as long as it was black.

One thing that can be said in criticism of textiles as a whole, is that in the past there has been very little research either in the manufacture of the product or the adaptability of certain fabrics towards certain end uses. This condition is now changing, and I am glad to say that some serious work is being put in on research. We for one are going into this very extensively. I predict great strides will be made along these lines, although research is slow work.

MESSAGES TO THE CONVENTION

Nation's leaders stress importance of purchasing function in reconversion

President Asks Cooperation

Dear Mr. Renard:

I wish you would pass on to all of your members attending the annual meeting of the National Association of Purchasing Agents my cordial greetings and best wishes for a highly profitable session.

No business or professional organization in the country is in a better position than your Association to be fully and currently informed about the economic problems and conditions in the United States. Your members represent not only private businesses of all kinds, but also governmental and educational institutions. By virtue of this wide representation you are in an excellent position to cooperate with government in its attempt to coordinate all the segments of our national economy so as to bring about maximum employment and production during the years of peace. I know you will continue to work as an organization for the good of the whole American community.

Very sincerely yours,
HARRY S. TRUMAN
President of the United States



The Buyer's Problems are the Nation's

There is no group of specialists in our business community more directly concerned with the successful functioning of our American system than the purchasing agents. Certainly no large group in our country is better informed on the day-by-day progress of reconversion—of the obstacles that have been overcome to reach our present position and of the problems that still lie ahead.

You have gathered to discuss "Purchasing's Challenge and Opportunity." Inevitably you will be discussing the Nation's challenge and opportunity, because, under our democratic system of free private enterprise, the two are inseparable.

During the war, the purchasing agents of this country rallied magnificently behind the Nation's all-out drive to democratic victory. Your knowledge of the country's re-

sources and materials and of the new uses to which they could be applied; of new techniques to increase production and lower costs, were given unstintingly. They helped make possible the miracles of production which overwhelmed our enemies.

The country still needs your unstinting cooperation. The dangers of war are not entirely over. You men and women who must contend



with those forces during every hour of your working days are keenly aware of their menace. For this reason many of your local associations have warned against the too hasty removal of price control and have urged the continuation of OPA for another year.

In your daily operations, purchasing agents can contribute substantially to the fight against inflation by close buying, by maintaining minimum working inventories, by exercising the same ingenuity in simplification and substitutions which were displayed during the war.

I shall study the conclusions of your conference with deep interest. Many of the problems scheduled for discussion at your conference are the same problems with which my office is contending. Mutually, we share the challenge to solve them in the Nation's interest.

Sincerely,

JOHN W. SNYDER
Director, Office of War
Mobilization and Reconversion



Small Warns of Continuing Shortages

The CPA Administrator's message was read from Washington over a telephone and amplifier hook-up

We stand now at another critical point in the period of transition from war to peace. I doubt if any one can measure with any accuracy either the immediate or ultimate damage to industry that will result from the series of economy-shaking strikes through which the country has been passing.

The soft coal strike, coming on the heels of the coal strike, drove industrial production down in April just as it was beginning to make headway for the second time since the war. In May, the two-day railroad strike, coupled with only part-time operation of the soft coal mines during the two weeks truce, further checked industrial activity. Future production will be adversely affected for many months by the continuing effects of these strikes as they have their impact through our complex and interrelated economy. The events of the past few months have certainly demonstrated the fact that



our American economy is as inter-related as is the mechanism of a watch.

Hard as it may be to believe, the American people live from hand to mouth. We consume as we produce. If production stops even for a short time, consumption also must go down. Great as production has been since V-J Day—and it has never fallen to less than 150% of the pre-war level—consumption has exceeded production. We have accumulated no inventories, no stock piles, since V-J Day. Almost everything that has been produced and distributed has been sold.

Our supplies of coal, steel, copper, lead, tin, and other raw materials are far less than they were in August of 1945. Our supplies of textiles, tires, hardware and tools are also below their V-J Day level.

The narrow margin of supply on which we live and work is not realized by most of us until the production flow stops. The total inventories of our stores amount to less than 30 days. Our manufacturers carry a stock of goods approximating 60 days' supply. And our food supply is even more precarious than these figures indicate. Except for occasional items which are insignificant in the overall picture, no large scale hoarding is taking place. Finished goods are being distributed and sold almost as soon as they come off the assembly lines.

An outstanding effect of the strikes has been to intensify the same shortages that have been plaguing industry and to create new shortages. We must realize that the settlement of a strike in a basic industry such as coal or copper, does not result in the immediate flow of materials and goods.

In view of these shortages, the thin supplies now available must be spread thinly and equitably across all industry if we are to avoid industrial chaos and probable irresistible demand for the reintroduction of widespread allocation.

Only by the wholehearted cooperation and restraint on the part of buyers and sellers can these dangers be avoided. So I must again urge the purchasing agents of industry to reduce their purchases of scarce items to the absolute minimum that their companies can get along with during the highly critical two or three months ahead. Only in this way can subsequent channeling be avoided.

JOHN D. SMALL
Administrator,
Civilian Production Administration



Price Administrator Says Controls are Temporary

It takes skill, perseverance and ingenuity to get vast supplies of materials to factories at the right price and at the right time so that production keeps rolling. Now that the shooting war has been over for more than nine months, some of you are probably becoming impatient because it is still difficult to get some of the goods you need. You may be irritated by the red tape and the regulations that still govern many of our operations. The tendency is to blame OPA for some, if not all, of the shortages. I can understand this feeling.

None of us, however, should lose sight of the rapid strides this nation has made in the gigantic task of converting almost half our economy from sword to plowshare. Nor should we overlook the enormous

network of supply and distribution pipelines to be filled with goods that have been out of production and out of stock. Before the coal shutdowns and rail difficulties, production had reached the highest level in our peacetime history. Employment had risen to 54,000,000. That progress was made under price control. I am confident that, once labor difficulties are solved, the resumption of production will be rapid.

Those who think that price control causes trouble and confusion should weigh the facts. Elimination or weakening of price control at this dangerously critical inflationary period would cause business much more trouble and confusion. The job of the purchasing agent would become more difficult when

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IN this day of critical commodity shortages, the subject of industry's import needs is of unusual significance. To an appreciable degree, the United States is self-sustaining in production, but there are scores of basic agricultural and industrial products that are entirely foreign to the United States, or at least are produced in extremely small volume—coffee, tea, sugar, vanilla, cocoa, bananas, cashew nuts, oils, natural rubber, shellac, varnish gums, tin, carnauba wax, and jute—to name a few in each category. However, a survey of the over-all picture of international trade presents some rather startling data.

Time was when the United States, during its early growth, imported far more than was exported, and this was true decade after decade up to 1876, which marked the turning point, and from that year up through 1945 exports have consistently more than eclipsed the amount of goods and materials imported. Our favorable trade balance during World War I was over the \$3 billion mark annually from 1916 through 1918, and in 1919 exceeded \$4 billion, but all of this fades into insignificance when it is realized that the excess of exports during the three-year period 1942 through 1944 exceeded \$24,855 million. This, of course, represented primarily war goods and Lend-Lease.

General Background

Let us carefully inspect statistical data pertaining to recent years. The statement has already been made that a favorable trade balance for the three-year period 1942 through 1944 was in excess of \$24,855,000,000. During the preceding ten-year period, or from 1933, at which time the critical depression reigned, up through 1942, the United States accumulative favorable trade balance was \$11,763,132,000, but if you are progressing on the premise that all branches of trade fully participated in this attractive figure on the black side of the economic ledger, you are badly mistaken.

The records show that during the latest decade for which complete statistics are available, imports of crude materials exceeded exports by 39%. In the case of crude foodstuffs, the influx exceeded outgo by 240%. Even in the case of manufactured foodstuffs, we find the percentage increase in favor of imports 15%.

Not until we come to semi-fabricated and finished goods do we find

IMPORT NEEDS ARE CRITICAL

Demand for imported materials is high to offset domestic deficiencies, while foreign production is not yet up to prewar levels. U. S. price policies place us at a competitive disadvantage in world markets

By H. N. McGILL

President McGill Community Service, Auburndale, Mass.

Address at the N. A. P. A. Convention, Chicago, May 28, 1946

a more alluring picture as regards favorable balance of trade. During the decade 1933 through 1942 exports of semi-manufactured goods totaled \$5,687,955,000, exceeding imports by 15%. However, exports of finished manufactured goods for the same period were \$19,838,600,000, and eclipsed imports of finished goods by 370%. Exports of finished products alone accounted for the ten-year favorable trade balance in excess of \$11 billion.

It is obvious that during World War I, and particularly World War II, the United States used up its natural resources at an exceedingly fast pace, and this is bound to have important consequences from a longer-range standpoint. Today demand for all types of raw materials and finished goods is of unprecedented proportions for a peacetime era. We have the manufacturing producing capacity, the manpower, money, and transportation, but we are lacking badly in raw material supply.

Hides

Let us inspect some of the high spots in individual commodities. In the case of hides and leather, before the war the United States was an import nation, importing as much as 407,282,000 pounds in 1918, 324,364,000 in 1922, and 192,235,000 pounds in 1940. As a result of the war an International Hide Committee was inaugurated which allocates the available supply of hides among the United States, Canada, Great Britain, and a number of European countries on the basis of population. The point is that under this agreement, this country exports hides whereas before the war it was an importer. Only abnormally

high cattle slaughter in the United States has prevented an even more serious shortage. Now the stumbling blocks are:

(1) Importing countries outside the International Agreement, such as Russia and Mexico, are willing to pay well above ceilings, which tends to divert supplies or hold back stocks for higher prices.

(2) Inspected cattle slaughter is running around 40% below a year ago, which largely reflects the spread of black-market operations. Furthermore, the goal of the Administration is to reduce cattle numbers, which are currently high, to prewar proportions. Currently total visible stocks of all cattle hides and leathers stand at 14,016,000 pieces, which compare with a previous twenty-year average of 15,011,000. Our import needs are urgent, but under the present system actual receipts will be of an extremely limited character, and consequently an increasing percentage of shoe production will be comprised of plastics and fabrics.

Copper

Consider the case of copper. The United States refined copper output jumped from 638,076 tons in 1938 to a war peak of 1,206,871 tons in 1943. This increase of nearly 100% again was at the expense of our natural resources. It is estimated that on a minimum basis over-all requirements of primary copper this year will exceed 1,200,000 tons. It was assumed earlier in the year that there would be an adequate supply based on a prospective domestic refinery output of 770,000 tons, imports 270,000 tons, and utilization of about 300,000 tons of the government stock pile. However,

due to strikes, domestic refinery output for the first four months of this year was on an annual basis of only 474,027 tons. As a result, the Government stock pile has diminished at an exceptionally fast rate.

True, there is undoubtedly plenty of copper in offshore producing areas, particularly Canada and South America. The Government has negotiated for new supplies from these sources, but here again, we find the world market above legal ceilings in the United States. The world market has recently held around the 14¢ level as compared with a domestic maximum of 12¢. Wage rates in copper mines were recently elevated in a forceful manner, which makes necessary a price boost of around 2¢ per pound in addition to the subsidy. This country could readily use imports at a rate comparable with the record of 1945, but under existing conditions we will do well to obtain 270,000 tons which, added to prospective domestic output plus the Government reserve stock pile which has been on the toboggan slide since the latter part of last year, amount to a substantial deficit in comparison with demand.

Lead and Tin

Lead is in a similar category. On a minimum basis the amount of this metal required this year will be in excess of 1,000,000 tons. Where are we going to get it? The records show that based on the rate of production to date for 1946, refined output will total 472,330 tons against 524,328 last year and a war peak of 634,888 in 1941. The Government reserve stock pile has rapidly diminished, only slightly in excess of the 40,000-ton mark. Producers' stocks on April 1 were 41,939 as against 143,511 for the same period in 1938. Lead is available in

sizable volume from Mexico, Canada, and Australia, and even prior to the war the United States was an import nation. The chief obstacle in the path of heavy imports is again the price factor. Lead is unquestionably underpriced, and the subsidy does not appear to be the solution for stimulated domestic output or a free flow of offshore lead to our shores. With the Government stock pile frozen and domestic output tapering off, there will be a deficit of about 200,000 tons for the year 1946. Industry's import needs are just as acute as during the war, but the outlook for receipts is much less favorable.

Then there is tin, a commodity entirely of foreign origin. Prior to the war this country, the principal world consumer, utilized on an average 62,017 tons annually. Our major sources of supply were quickly cut off, and domestic reserves dwindled to the irreducible minimum and were protected by conservation measures and allocation system. The presumption is that 12,000 tons of pig tin will be imported this year, but this is contingent upon further arrangements which must be made for supplies from Bolivia and Belgian Congo following the termination of existing contracts on June 30.

Reports are to the effect that recovery in output in Malaya and the Dutch East Indies is progressing slowly due to the shortage of labor, machinery, and food. Then, too, there is great dissatisfaction over price schedules. Here again is a case where a basic commodity is underpriced, and consequently, whereas industry's needs are of overwhelming proportions, the outlook for imports not only from the Far East but from South America is far from reassuring.

Jumping to commodities in a to-

tally different category, rapid extension of Japanese control over most of the Southwest Pacific area in early 1942 deprived the United States of imported oils and fats amounting to about one billion pounds annually, approximately half of our total imported supply. Our allies were also cut off by Axis aggression from former sources of supply, and naturally turned to the United States for greatly increased quantities which were supplied as much as possible under Lend-Lease arrangements. At the same time domestic demand for fats and oils increased.

Fats and Oils

Imports of tung oil, coconut, perilla, rapeseed, etc., dwindled to a mere fraction of the normal complement, and it was necessary to inaugurate a program of rigid conservation measures. Now the war is over, and the door is wide open for a return to normalcy, but at no time underestimate the element of time. World supplies of fats and oils will remain short of demand not only for the balance of the year, but throughout 1947. All recent reports indicate that recovery of exports from the Far East and production of animal fats in Europe will be gradual. On the basis of the experience following World War I, it will be at least five years before European output of animal fats will approach the prewar level.

Wood Pulp

Another vital commodity much in the limelight from an import standpoint is woodpulp, both sulphite and sulphate. Prior to the war, in the year 1939, the United States imported 1,299,769 tons of pulp from the Scandinavian countries. In the same year 633,876 tons



were received from Canada. During the life of the war the Scandinavian source of supply was entirely cut off, and it was a question of stimulating output in North America, and in the face of manpower shortage, overtaxed transportation facilities and overworked equipment, total woodpulp production in the United States jumped from 5,600,613 tons in 1938 to a war peak of 10,198,339 in 1942, and aggregated 9,401,843 in 1945. Despite this accomplishment, the overwhelming demand for pulp for war purposes, particularly in the container field, quickly created a severe shortage, and paper supplies in civilian channels dwindled to the minimum.

The end of the war found around a million tons of pulp in the hands of Swedish interests available for quick delivery, and the United States obtained a full quota, and while this eased the tight supply-to-demand ratio, there was no opportunity to build up a surplus. Now a new season is about to open up, and we find exactly the same conditions that existed in the summer of 1945—productive capacity of paper taxed to the utmost, a huge backlog of unfilled orders, and shortages not only of pulp but to some degree, fuel. Recently OPA officially increased ceiling prices for woodpulp, both foreign and domestic, ranging from \$3 to \$12.50 per ton. This increase was deemed advisable to offset higher producing costs abroad—but again, too little too late. Swedish mills have already sold a sizable tonnage to foreign consuming nations prior to the price mark-up.

Now the set-up is something like this: A 5% increase in domestic output, although the total for the year is off to a relatively slow start. It is assumed that Sweden will have available for export in 1946 some 1,700,000 tons, and in view of the recent price adjustments upward, the United States could reasonably expect close to 1,000,000 tons of this total. Finland and Norway are expected to ship an additional 200,000 tons, and imports from Canada will be around 1,200,000 tons, making a grand total of 2,400,000 tons of foreign pulp which is a figure substantially in excess of recent and prewar years.

We are progressing on the premise that not much more than 700,000 to 750,000 tons of pulp will reach our shores this year from Sweden. This all adds up to a continuation of a tight woodpulp supply status. Industry's import needs are urgent, and every ton that we

can import from any country will find a ready market.

Summary

Summing up industry's important needs, the following points stand out conspicuously:

- (1) Our natural resources have been used up at a sensational pace.
- (2) Today the reservoir of replacement demand for all types of civilian goods is the highest ever known for a peacetime era.
- (3) Several years will be required to establish a more normal supply-to-demand ratio from a world as well as a domestic standpoint, and the rapidity of the shift to a more normal basis is fundamentally contingent upon the volume of raw materials available.

It would appear that, fundamentally at least, our import opportunities are great. Throughout the world—Asia, the Orient, the Southern Hemisphere—there are rich na-

tural resources which could be used to outstanding advantage to both producing countries and the United States. First of all, increased imports would help foreign countries financially, paving the way for greater prosperity and a higher standard of living. Second, a marked stimulation in imports would prove a welcome supplement to our own inadequate rate of output. However, whether or not we will tap deeper into the available resources in foreign nations remains highly problematical. The record is not particularly reassuring. After World War I and prior to World War II this country voluntarily jumped into a whirlpool of economic experimentation, the bulk of which has failed miserably. Nevertheless, there is no sign whatsoever that the narrow-sighted policies of high tariffs and subsidies, processing taxes, and other devices which give a false conception of true values will be eliminated even over the next few years, a time when industry's import needs will be of unprecedented proportions.



BY-PRODUCT CHEMICALS

Research is greatly expanding the field of by-product coal chemicals and improving methods of recovery

By H. V. LAUER

Field Supervisor, Raw Materials
Carnegie-Illinois Steel Corporation
Chicago

Address before the Chemical and
Allied Products Buyers Group,
N.A.P.A., Chicago, May 27, 1946

UP to the start of the recent war roughly 60% of the tar produced in this country was refined, the balance being used directly as a fuel largely in steel plant operations. The demand for pure chemicals during World War II greatly changed this picture. For instance, in 1937 there was roughly 600 million gallons of tar produced, of which 60% was either refined at the coke plant or sold for refining. In 1943 there were about 740 million gallons produced of which 72% was refined at either one place or the other. During 1944 over 75% of the 768 million gallons of coke oven tar was refined or topped.

Since the start of the last war, interest has been growing in the recovery of new compounds. Carbazole is an example of one of these recent developments. Our investigators in Germany found it was used there during the war to produce a new type of high-melting resin. Although production was not large, it indicates that tar chemicals other than phenol and naphthalene, which are the large ones, have possibilities in this field.

As far as the crude light oil as recovered in the benzol plants is concerned, there are several variations in the treatment of this product but, in general, the light oil is usually separated and treated in two fractions. One contains the low boiling hydrocarbons, namely, benzol, toluol, and xylol. The second, or the solvent naphthalene fraction, consists largely of resin-forming compounds, a series of high boiling benzene homologues, some naphthalene, and extremely small percentages of absorbent oil and carbonaceous residues. The resin formers include such compounds as styrene, indene, coumarone and dicyclopentadiene, the separation of which is difficult.

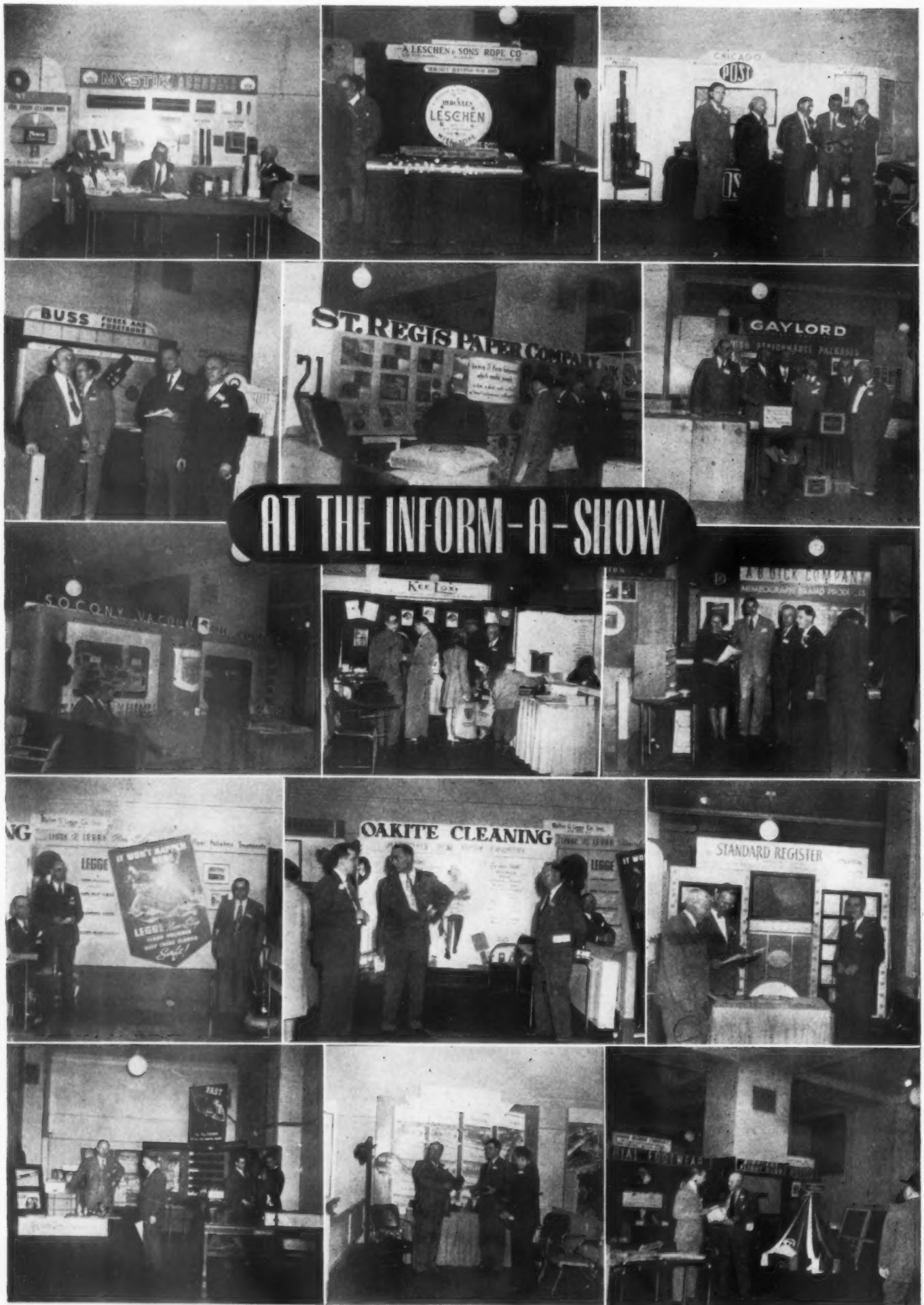
Benzol, the largest component, constitutes about 85% of the light oil. This is a colorless, very stable hydrocarbon and is the basic compound for considerable organic synthesis. Toluol, which constitutes about 10% of the light oil, is a similar compound and in addition to being the basic compound for TNT has found other uses in the organic chemical field. Xylol, which constitutes about 1 to 2% of the light oil, like toluol and benzol is a colorless liquid, and which as now recovered and marketed in this country, consists of three compounds, namely, ortho, meta and para xylol. This mixture has found a use in the plastics field as well as being a vehicle for paints, to mention a few. It has many others. The other fraction of the light oil, which we referred to earlier as the solvent naphthalene fraction, comprises only 2 to 2½% of the light oil and, while consisting of a myriad of compounds, it has thus far been found difficult to separate them commercially.

To give you a picture of the advance in this coal chemical field, about 47% of the crude light oil in 1939 was refined and sold as a motor fuel. However, wartime demands for benzol dropped this to 7%. This, in no small measure, was due to development of new applications of benzol derivatives in the field of synthetic rubber, styrene, nylon, and cumene, to mention a few. Increased interest in this period

has been noted in high purity products such as thiophene-free and low paraffin benzols.

Interest and research in the plastic field, which has continued to grow especially through the late war period, has been felt especially in naphthalene. This is the basic raw material for the production of phthalic anhydride which is used in producing the alkyd resins used in protective coatings. Tar acids, in addition to the synthesis of phenol from benzene, are the base for the phenol-formaldehyde resins whose application we find in molding and adhesives, among the larger ones. Among the products in general recovered in coke plants prior to the war and which are in relatively small quantities are pyridine bases and cyclopentadiene. Interest has been evidenced recently for the separation of the three xylols mentioned before contained in varying percentages in the xylol fraction.

In addition to all this, other coal chemicals contained in the coke oven gas in considerable amounts, which it is felt could be recovered economically, are cyanide and sulphur compounds which now go out either with the coke oven gas or with waste disposal products. One of the scientific groups sent to Germany after V-E Day discovered that a few of the coke plants were recovering the hydrogen and methane contained in the coke oven gas separately. After separation they were purified to considerably above 98% and sold for organic synthesis and hydrogenation processes. This is interesting because with coal yielding about 10,000 cubic feet of gas per ton, of which well over 50% is hydrogen and between 25 and 30% is methane, this seems to us as one of the most fertile sources for these two products in all industry today.



AT THE INFORM-A-SHOW

LUMBER SHORTAGES WILL CONTINUE

YOU men have seen reams of publicity about magic new materials. What about this one?

This is a material that is light in weight, which can be shaped and formed by hand or with high speed tools. It can support hundreds and thousands of times its own weight as a beam or as a column, can be pre-cut by line production methods and fabricated to close tolerances. It can be used to serve in thin panels as a membrane to cover hollow spaces, and provide of itself a natural insulation against the elements of temperature, moisture, and the like.

It will stand weathering for countless generations in its natural form, and withstand the abrasion of numberless footsteps and the impact of wheels. It is easily treatable with a multitude of supplementary decorative finishes to suit the whimsical tastes of the individual, it will never rust or spall, and will retain its strength longer under fire exposure than so-called incombustible steel. It can be sawn, turned, nailed, chiseled, carved, bolted, screwed, glued, bent, bored, sanded, planed, stained, coloured, painted, impregnated, and hardened.

There is such a material, but it is not brand-new. Evolution, the great inventor, and Mother Nature, the greatest chemist of all time, have made us a free present of wood, that miracle material I have described—but unfortunately, it like the other magic materials is not at the moment available in unlimited quantities.

Estimates of Demand

It may be well to review quickly the various estimates concerning the size of the demand for lumber during the next couple of years. The only fact which seems pretty certain is that demand, both for housing and non-housing lumber, will probably exceed the supply for some time to come.

We ourselves are not sure just how long that will be true. To be sure, it is obvious that we can sell every stick of lumber that can be produced right now, many times

The lumber industry has capacity to meet national demand but needs time to bring the situation into balance

Address at the N.A.P.A. Convention
Chicago, May 28, 1946

By **RICHARD G. KIMBELL**

Director of Technical Services
National Lumber Mfrs. Association

over. But—how much duplication is there in those orders, how long will the demand hold up, and at what price and other relationships with other materials and with the general level of prosperity?

The government, through the Civilian Production Administration, has estimated that the demand for lumber for all purposes would require the production of about 33 billion board feet this year, and about 39 billion feet in 1947. In addition to this consumption demand, the lumber pipeline—mill and dealer stocks—would need an estimated 4 billion feet each year to get somewhere near normal. Normal being the time when you can phone the lumber yard down the street and say, "Joe, send me over 30 pieces of 16-foot 2x4's this afternoon."

These add up to the government estimates of demand—nearly 37 billion feet this year, and 43 billion feet next year—an awful lot of lumber, but more about that later.

If you are a close student of statistical data, you will find that these CPA figures are appreciably different from other government estimates of lumber needs. But that is only because the CPA has taken the actual consumption figures, and given them a three-months' lead. That is simply a recognition of the fact that the lumber must be produced and shipped before it can be used, and therefore all of the CPA estimates are really production requirements; for 1946 they cover the consumption demands for the last nine months of

1946 and the first three months of 1947.

The CPA reports are calculated figures based on pre-war requirements, but obviously purchases of lumber at the present moment would be at a much higher rate if unlimited quantities of lumber were available. Neither we nor the government, I am sure, could more than guess at what such a demand figure might be. I am confident, though, that it is not the astronomical total which some people would have you believe.

Probable Production

But forget these nebulous demand figures for a moment. How much lumber is our industry going to produce this year? You will hear, or you already may have heard, a number of different figures all intending to be reliable estimates of lumber production. The reasons are fairly obvious. There are more than 40,000 sawmills in the United States. The vast majority are small, or extremely small, yet in the aggregate they account for a very large proportion of total lumber production. No agency, government or industry, can keep track of the current operations of these mills. Many of them may not even keep any record, and few report any data to anyone. Therefore, every lumber production figure, no matter who makes it, represents an estimate made upon a sample.

Our NLMA Statistical Department has been sampling lumber production and other data for many, many years—mostly based upon reports to us from our member associations in the various lumber producing regions. And although, because of the admitted inadequacy of the samples, we hold no especial brief for our own data, in the past they have held up remarkably well against the final authority—the reports of the Census Bureau which come along several years later.

That is a somewhat lengthy explanation, but I think it is important for you to understand because increasingly from now on you will see lumber production data reported in

the newspapers and other places, and you should realize that you ought to take all of them, even ours, with a grain or two of salt.

Based on our samples, we estimate that total United States production in the first quarter of 1946 amounted to only a little more than 6 billion board feet, and from weekly data since then, that production in the second quarter will be about 8 billion feet—a total of 14 billion feet for the first half of the year. To produce the almost 37 billion feet which would be needed to meet the CPA requirement for 1946, we would have to cut nearly 23 billion feet in the last half of the year—on the face of it an absolutely impossible assignment. It just can't be done.

What can we do? Well, we think that we will reach something near, but probably less than 16 billion feet in the last half, for a 1946 total of about 29 or 30 billion feet. The CPA has set for us a goal of 32 billion feet, but right now agrees that 30 billion feet is the probable maximum. That is 10% below the requirement, without anything at all for stocks. Remember, they wanted 4 billion feet for stocks in addition to almost 33 billion feet for consumption.

No one knows just what minimum stocks can be and still keep the industry operating smoothly. Before the war, we had 18½ billion feet in stocks. Now we have a little more than 4 billion feet. That is not enough. Lumber distribution isn't working well; it creaks and groans along from day to day, and from hand to mouth, and we have just got to build up stocks a little. So by whatever amount stocks automatically build themselves up in self defense, plus by whatever amount we miss producing 33 billion feet, by that total we will fail to meet the production requirement which you and other lumber consumers could use.

Restrictive Regulations

Don't misunderstand me. The lumber industry is producing a lot of lumber. But the same government shackles which bind most of you still prevent any all-out lumber production. There is no incentive to produce, and until there is, the marginal operations which would bring the industry up to full capacity just cannot be put into production. The housing program intends to use its subsidies as a lure to increase lumber production, but as you well know, we have consistently and steadfastly opposed subsidies, not only because of our opposition to

the principles involved, but also because we cannot see how they could be made to work in an industry so diverse and complicated as ours.

The capacity exists. Going all out, our mills can make more than 40 billion feet of lumber a year. We don't need new mills; we need freedom from the overwhelming burdens of strangling government regulation.

One other factor definitely will affect your chances of getting the lumber you need: government channeling of materials through priorities and other restrictions. The one order which principally concerns lumber is Direction One to Priorities Regulation 33, which orders sawmills to make at least 40% of their soft-wood production in housing lumber items, 100% of oak hardwood flooring, and other similar set-asides, which must be reserved for the veterans' HH priorities. Aside from those restrictions, however, any mill may sell whatever it desires to anyone. Use of the material, of course, may also be restricted by the construction order, VHP-1.

Direction One will determine, to some extent, the types and sizes of lumber which will be available for other uses besides housing, because many mills find it difficult or impossible to make even 40% of their output in housing sizes, and obviously if you, in your business, need similar types of lumber, you are going to have a much harder job getting it than if you can use the types and sizes that are not used in housing. And there is a distinct possibility that these veterans' set-asides will be increased in the near future.

Looking to the Future

We are looking forward, just as you are, to the day when you can order and receive immediately just exactly the lumber sizes and grades you need for manufacturing and construction uses—lumber that is seasoned properly, sized and graded, and is the one most desirable type for your cabinets or patterns or paneling or furniture or whatever it is you want to make with it. I can assure you that the lumber industry is highly conscious both of its obligations to you, its customers, and of its own future in which it will undoubtedly have to go out and start swinging in order to sell.

The lumber industry has no worries about the adaptability of its product to the new markets of tomorrow. We can do things with wood which will match and beat the claims of our competitors in many markets. Wood is still the best

product in most of its traditional uses. Wood is also an amazing new material which warrants your closest investigation, not only in its role as a raw product for chemicals, plastics, and other basic hydrocarbons, but also in its physical adaptations as a construction and fabricating material. The huge timber structures built during the war, made possible by the revolutionary connector system of construction, forecast a vastly-enlarged market for lumber as a construction material. Impregnated woods; that war-brought wonder, compreg; the marvels of lamination; all of these have brought the country's oldest industry into a brand-new era in which, far from taking the attacks of competing and substitute materials lying down, we are going to go out and take some markets away from them.

URGE CAUTION IN BUYING FIRE EXTINGUISHERS

Selection of fire extinguishers, unless obtained directly from the manufacturers or their authorized agents, requires special care at the present time because equipment now available from other sources as the result of government release of surplus extinguishers may no longer be fit for service.

Some of the models carry only "EAS," or temporary approval by the Underwriters' and Factory Mutual Laboratories. These are the substandard devices manufactured as an emergency measure during the wartime shortage of critical materials. They are readily recognized by the letters, "EAS," which stand for "Emergency Alternate Specifications" on the nameplate. Also such equipment bears a decalomania rather than the standard metal nameplate. Emergency approved extinguishers were not expected to stand up as long as the standard types and by now may be wholly unserviceable.

Other equipment released as surplus, though standard at the time of its manufacture, may now be dangerous to use because of mishandling or improper maintenance since it left the factory. Dents, bulges, signs of corrosion, evidence of soldering or other repairs are indications that the equipment should not be used until it has been properly repaired and tested by the manufacturer.

COMMERCIAL STANDARDS

How the National Bureau of Standards
gives assurance of quality, promotes
fair competition and buyer confidence

IN this day and age, with the ever-increasing number of synthetics and the greater complexity of products made from natural materials, consumer-buyers, and even professional purchasing agents, have found it increasingly difficult to distinguish between items of real merit and inferior products.

As a protection against these conditions a great many types of testing and labeling methods have grown up. In addition, a great deal of buying by industry—as well as of Government—has been placed upon the basis of specifications set forth in purchasing contracts. Many small businesses, and certainly ultimate consumers, cannot use the method of contract buying on specifications. They have to depend on somebody's name, trade brand or label.

It has been our custom to recommend to manufacturers that once a commercial standard has been established and accepted by the trade, that they identify their products as meeting the minimum requirements of the standard by incorporating a brief statement or symbol in the form of a guarantee label showing compliance with that standard, on their product and in their advertising. This procedure of identifying goods should be very helpful to professional purchasing agents, in determining the quality of goods.

Foreign buyers, as well as domestic, are searching for assurance as to quality. Therefore, in co-operation with business, commercial standards may be developed and established for American export trade, or domestic standards may be translated into foreign languages.

Commercial standards are entirely voluntary. Our office has no authority either of initiation or enforcement; its chief function is that of an unbiased co-ordinator to insure adequate consideration of the desires of the entire trade, including producers, distributors, users, and testing laboratories. There are now 135 established commercial

By GUY S. GALE

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National Bureau of Standards
U. S. Department of Commerce, Washington

Address before the Governmental,
Educational and Institutional Buyers
Group, N.A.P.A., Chicago,
May 27, 1946

standards. Such standards by their very nature provide a basis for fair competition within industry, and between industries and enhance buyer confidence, particularly at the point of sale.

The purpose of these standards is not to make products wholly uniform, nor to surrender any selling points, trade names, trade brands, or other means of helping the buyer to make a selection, but rather, in line with all good standards, to provide a common ground for better understanding among all concerned.

When a common understanding has been reached by the branch of industry that proposed the development of a standard, a draft representing that consensus is prepared and submitted to all known producers, and to representative distributors, users, testing laboratories, trade associations, and interested Government agencies, such as the Department of Justice and the Federal Trade Commission, for advance comment. Comment so received is harmonized through correspondence, personal conferences and consultation with our technical personnel.

When essential accord has been reached, it is submitted to the entire trade for written acceptance. This acceptance does not bind the acceptor to unvarying compliance with the commercial standard. Such an acceptor does, however, engage to utilize the standard as far as practicable. Acceptance is sufficiently flexible so that ample leeway is provided for the development of improvements and the use of special products adapted to particular uses.

Acceptances representing a satisfactory majority of the trade, including at least 65% by volume of production or consumption are required, without any valid objections from any quarter, before a commercial standard may be promulgated.

Standing committees are appointed whose function it is to pass upon all future revisions intended to bring the standard into conformity with advancement of the art.

The Bureau of Standards has never needed or requested policing powers. When a seller has made a public declaration that a product complies with a standard, he thereby voluntarily assumes a legal responsibility to the purchaser. Misrepresentation or wilful selling of substandard goods constitutes a breach of sales contract and correction can often be obtained via the Federal Trade Commission, local Better Business Bureaus or other channels. We have learned through the years that manufacturers and distributors are watching for such misstatements, and false claims are comparatively rare.

CONVENTION CITY TO BE NAMED

As usual, there was much speculation as to the selection of a convention city for 1947, but this decision will be announced later by a committee from the new Executive Board. The increasing size of N.A.P.A. gatherings places a serious limitation on the choice of a city with hotel facilities equal to the demand. Both Canada and the West Coast are eager to serve as hosts to the Association.

SUPPLY AND DEMAND IN THE STEEL INDUSTRY

Our steel problem is not one of mill capacity, but of sound economics and the philosophy of productive work

By **HILAND C. BATCHELLER**

President

Allegheny-Ludlum Steel Corp.
Brackenridge, Penna.

Address at the N.A.P.A. Convention, Chicago, May 28, 1946

THE story of the apparent ever-multiplying demands for steel and the possibilities of their fulfillment is one of great expectations versus cold realities. In years prior to the war, there were few if any occasions when the peak demands of our industrial economy could not be satisfied. Today we are faced with an unique and rather baffling condition.

It is being dinned into our ears daily that because of the war we are going to emerge into a new and better world where everyone can press buttons, metaphorically speaking, and in some mysterious automatic way receive filet mignon, colored television sets, laborless dishwashers and the multiplicity of other attributes of a higher standard of living. Even life would become less precarious, what with DDT taking care of all bugs on the outside and penicillin all the bugs on the inside.

The industrialist, the politician and the labor leader have at one time or another, all been equally guilty of the pleasant wishful thinking that out of this welter of destruction of wealth and work by war they may expect better wages, shorter hours, a free insurance policy covering all the hazards of birth, life and death, a guaranteed annual income, full employment for everybody and a higher standard of living through increased purchasing power.

Fairy stories have been written on that theme. The story of Aladdin's Lamp was one of them. But at least Aladdin had to use some el-

bow grease before the genie appeared to do his bidding. If that were the way to raise the scale of prosperity, we should hold annual bonfires in all our communities and burn most of our possessions.

Production Needs Work

Work is the logical forerunner and accompanier of expectations, unless one is awaiting the death of a rich uncle. Creation, not destruction, makes wealth. The sooner we get that into the heads of everyone, including those brilliant young men whose trust in their own prodigious brains has not always been justified, the better it will be for us and the rest of the world. And hard work is the basis of the creation of values.

Even a routine examination of the history of mankind shows that man's attitude toward work has changed materially with the ages. In Adam's day it was regarded as a punishment inflicted for sin. Our fathers and grandfathers considered it as a duty to be performed and a privilege to be had. In our postwar economy it is looked upon as a right of possession accompanied by a meal ticket.

This conception of work as a right of possession accompanied by ception of the responsibility accompanying the exercise of that right is, in my opinion, our outstanding postwar moral liability. Like all half truths, it is more dangerous than a complete falsehood. It has come into being as a concomitant development of the machine age, which by making work easier has too often bred contempt for it and developed

a hitch-hiking economic philosophy in millions both here and abroad.

You purchasing agents, your plant engineers and production men all know wealth and prosperity of a nation is built. All wealth, however it may be distributed after it is created, must come from productivity. And to increase public wealth, whether in the form of wages, profits or taxes, you must continually strive to increase productivity. And not merely total productivity which could be done by importing fifty million workers, but productivity per hour and per capita.

Wages and Production

The average worker of today, as an individual, is no more capable than was his grandfather. He cannot lift and carry any more, if as much, nor does he have to. By and large he hasn't the same degree of skill with his hands as his artisan grandfather. He works little more than half as many hours a week and gets four times the reward as measured in purchasing power. Why? Primarily because capital, management and engineering have put tools in his hand that have increased his productivity without compelling him to increase his effort.

Yet today labor, or at least organized and vocal labor is demanding the fruits of increases in productivity when the increases have not yet been realized.

In the steel industry, although wages have been increased over 36% in the last few years, with all the patriotic urge of the war period and the preponderance of heavy products in the schedules tons produced per worker increased only 9%, and now in the postwar period all of that gain has been lost. Notwithstanding the fact that wages in the automotive industry have increased over 33%—where are the automobiles?

Perhaps the answer to some of the present frustration is that we are trying to climb the hill with our brakes on. You cannot build a better future from idle plants, idle machines, idle men and women, stagnating business, loss of wages and vanished profits.

Any reasonable employer will admit that it is to the best interest of business to pay the highest possible wages consistent with keeping industry and business solvent, providing the money for expansion and paying the cost of capital. Any reasonable worker will admit that marking pay envelopes up at the expense of a higher price level not

only gets him nothing, but detracts from what he has. For every cent by which you cheapen the dollar through this method is a cent less in the value of labor's saving in war bonds, cash and in the bank and insurance. Reasonable men should be able to get together and agree on these things in five minutes.

The epidemic of wildcat strikes and the more serious large scale labor disturbances now occurring are due to a number of causes. One of them is the natural reluctance of war workers to take home less pay than they have been accustomed to receiving under the forced draft of war production. Another is the belief on the part of labor leaders and some economists that since wages constitute over 85% of our total purchasing power, it is important to maintain high level wage earnings if we expect to support high level employment.

Most thinking employers, and it is surprising, perhaps, how many of them think quite objectively about these matters, will recognize the first cause and agree with the second. Their problem simply resolves itself into the question "What will we use for money?"

Three Sources of Higher Pay

Assuming for the moment that it were both desirable and necessary to increase postwar wage purchasing power some 30%, we face the problem of finding the money with which to do it. There are but three sources. One is from current profits. Another is from public subsidy through inflation. The third is from efficiency gains resulting in more purchasing power per dollar.

Labor leaders say we can get it from profits. Simple arithmetic will prove that this is not true. If all existing corporation profits, all dividends to investors, and all incomes of \$25,000 or over were turned into

the wage account, the total would hardly be enough to result in a 5% wage rise across the boards.

Now for the second alternative, namely public subsidy. That is the way we have been paying our war wages during the past several years. In effect it is robbing Peter to pay Paul because the burden falls back on the tax-payer in the form of present assessments on earnings and future obligations of increased national debt. This road leads straight to inflation because price rises are inevitable. By this method you can make take-home pay any amount you please provided you are willing to have take-home buying power reduced in like or greater proportion. But in the long run, nobody gains and everybody loses.

The third way of raising wages, the "real wage" way, is through efficiency gains and cost reductions that are passed along to the public in the form of more buying power per dollar. That is the traditional American way that has put this country in the most enviable position among nations. This third way, the sound American way of raising not only the value of wages but of all income, rests upon the basis of increased productivity. To have more pie to divide, no matter how you divide it, you must bake more pie. And you cannot bake it with the oven fire out.

Management's dilemma is not the wage question, primarily, although that indeed is a part of it. Its big problem is that of facing an uncertain future with sufficient managerial functions left to exercise to enable it to survive. For the past 15 years, there has been a progressive emasculation of the power of management to manage. It has reached a point where industrial discipline no longer exists in many unionized plants and factories, and

where flagrant infractions of ordinary decent rules of business conduct are immune from managerial action.

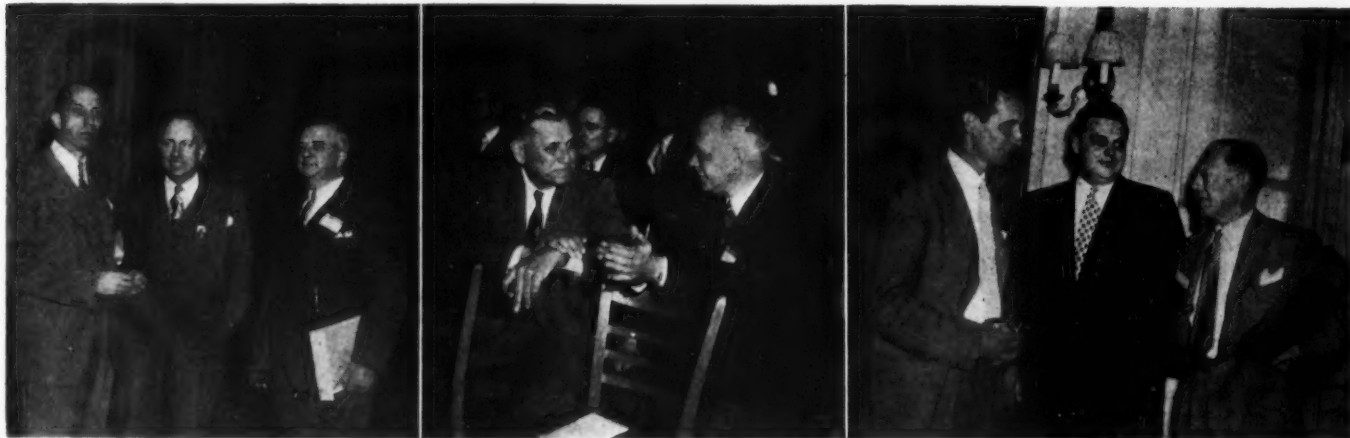
Demand and Supply

The American economic car, postwar model, in which all of us hope to ride to a better era, should be a highly improved model. It has been war tested. It has demonstrated its speed and its stamina. If today it is sluggish on the pickup, it is because we have not released the brakes in this up-hill climb to our postwar economy.

Take the fuel that we have today, for example, for our economic motor. In other words, steel and other materials available for industry.

You may well wonder where the steel is. In this respect, steel industry representatives, then members of the War Production Board, attempted to analyze postwar steel requirements for all industries, and on the basis of that analysis the recommendation was made and ultimately put into effect that controls over steel were not necessary; that small consumers' requirements would be taken care of and that newcomers would receive fair treatment in the distribution of available steel.

This analysis based the principal consuming industries on their peak production year, and used a weighted average of steel per unit. Total steel requirements were considerably less than steel capacity. By adding the peak-year requirements so obtained to those of the other consuming industries calculated in similar fashion, the total requirement was some 37 million tons. But the industry can turn out 60 million finished product tons each year. Granted an opportunity to produce, what doubt should there be of the ability of the steel industry to supply more finished prod-



ucts than steel-consuming industries can use?

There is one disturbing question for which I have no answer. How many of your companies are expanding their facilities and trying to buy materials, including steel, with visions of cornering the same market? In other words, let us assume there are twenty producers of a product, each producer manufacturing and selling a million units. The postwar market has been fairly tested and found to represent a market for 30 million units. The question is how many of the 20 producers are figuring on the "lion's share" of that increased market. Probably every producer figures he will be able to double or triple his postwar sales, and there is certainly no argument with anyone trying to do so. The net result of such expectations, however, may well be a fictitious and highly inflated demand for materials which currently loom so large on producers' books.

Problem of Distribution

If the steel industry were permitted to produce steel, this steel shortage would fast become a myth. Late last year, in fact, when production was just getting going, holes developed in some mill schedules. During the war the quickest and surest way to develop a shortage in anything was to have someone gossip the news of a possible shortage. Then you really did have a problem on your hands.

Order books today are watered, but will dry up fast when the industry gets the green light. Until that time some form of "Share the Steel" that was so successful during the war would be highly beneficial to everyone involved. If, instead of jamming producers' books with orders, you were to give them schedules of material you needed to keep operating or to keep pace with other materials, the present unfortunate situation would be, to a large extent, corrected.

The Civilian Production Administration right at this very time is under considerable pressure to establish priority on steel. The pressure is being exerted largely by governmental agencies, which insist that C.P.A. direct a certain tonnage of steel for (1) housing, (2) agricultural implements, (3) transportation and (4) export. So far, J. D. Small has resisted the pressure. If certain segments of the steel-consuming industries are furnished steel by directive, the net result will be a priority system which failed miserably during the war and which

ultimately had to be replaced by the controlled materials plan.

Another problem not fully recognized by steel buyers is that the product they want starts as an ingot. There is a distinct balance in the products that come from the ingots, a distribution or balance between plates, shapes, bars, sheets, rails, wire, pipe, and the rest of the products of the mill. Finishing capacity has always been in excess of steel-making capacity. Generally speaking, using the so-called "all-out" capacity of one product adversely affects the output of some other equally important product. If you could get all the flat-rolled products you could use, they wouldn't be worth a damn without the other steel items, needed to make your product, whether it be a common nail or a length of wire. Flat-rolled steel is more in demand today in relation to other products than it was ten years ago, but alone it would be as useless as only plates would have been in the building of maritime ships during the war.

To assure quick deliveries even with peak demands the steel industry, as some of you may know, planned to spend 327 million dol-

lars for new equipment during 1946. The bulk of this expenditure will go to buy machinery and equipment for producing highly finished types of steel for civilian goods. Several continuous mills for producing cold-rolled sheet and strip steel are included.

Let me give you one example of how our problems persist and hamstring operations. My company is trying to install a new continuous cold mill for flat-rolled steel. It was to have been in operation by July. The steel strike stopped the structural steel for the building. That problem was eliminated with the end of the steel strike, but the fabricators' employees were still out. When they went back to work the coal strike slowly paralyzed operations. All the while a strike had the electrical equipment tied up. Now we can't get the cranes because there is no structural steel again, because of the coal strike. All of the structural steel for the building was not rolled before the coal strike stopped the producer's mill again. The copper strike will further delay completion. As fast as I'm sure our situation reflects similar incidents in your own plant.



"Quit stalling and sign the contract, so that I can get on with my work"



THERE'S A NEW PLUS VALUE IN TUBING

N-A-X HIGH-TENSILE steel has now been "put to work" in the tubing field.

The high inherent properties of this low-alloy steel open the door to better values in tubular parts and products. Its strength gives designers the choice of *reducing mass* or *increasing durability* in such diversified applications as bicycle frames, porch furniture, auto seat frames, bus stanchions, garden implements and scores of others. Resistance to impact and fatigue is exceptionally high, corrosion-resistance very good.

N-A-X HIGH-TENSILE is easy to form and to weld by standard commercial processes. Weldments are unusually strong and tough, with good ductility retained in the heat-affected zones.

Electric-welded N-A-X HIGH-TENSILE tubing is now available through various tubing manufacturers.

GREAT STEEL
FROM
GREAT LAKES

GREAT LAKES STEEL CORPORATION

N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
UNIT OF NATIONAL STEEL CORPORATION

New PRODUCTS • IDEAS

Purchasing Agents and their Assistants are invited to check the pre-paid "Know-How" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.



LIFT TRUCK TELESCOPE FRAME



TELESCOPIC frame for use on Lyon-Raymond Corp. (Green, N. Y.) new hydraulic High-Lift truck increases elevated height on platform to 84", permitting higher stacking and tiering jobs.

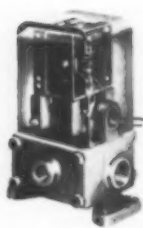
Standard elevated height without telescopic frame is 48". In lowered position with frame, overall height is 69". Motor driven pump is available and is recommended for frequent elevations.

PORTABLE GRINDER VIBRATION DAMPENER

is announced by Manhattan Rubber Div. of Raybestos-Manhattan, Inc., Passaic, N. J. Advantages claimed include elimination of vibration, better finish, less fatigue to operator, increased production and lower maintenance cost. Manhattan wheels with V.B.D. mountings are available in straight types up to 8" diameter for use on electric, pneumatic and flexible shaft portable grinders. Bulletin No. 6878 available.

NEW vibration dampener bushing resilient mounting, for use with Manhattan wheels for portable grinders,

3-WAY SOLENOID VALVE



working parts and little mechanical action. Solenoid draws less than 3 amps 110 v 60 cycle current. Available in six sizes from 1/4" to 1 1/4", to handle operating pressures from 0 lbs. to 150 lbs.

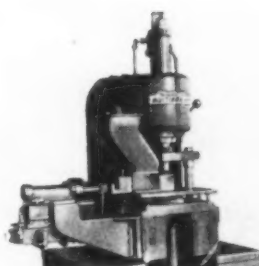
COMPACT, full ported, poppet type solenoid-controlled 3-way valve for compressed air is announced by Nوماتics, Milford, Mich. It is said to provide straight line air flow control with few

NEW HIGH FREQUENCY PROBE

fred W. Barber Laboratories, 34-14 Francis Lewis Blvd., Flushing, N. Y. Features include low input capacity of 1/2 to 1 micro-microfarad and extension of range of measurements 10 times — from 50 to 500 megacycles.

MODEL 29 high frequency probe for measuring voltages in very high frequency circuits is announced by Al-

SHUTTLE FEED ACCESSORY FOR POWDER UNITS



NEW shuttle feed accessory for use on their Multipress is announced by Denison Engineering Co., Columbus 16, Ohio. Accessory is said to broaden scope and utility of a multi-purpose small capacity hydraulic press and make possible high speed production jobs such as powder pelleting. Die fills up to 3" in depth may be obtained, and dies up to 4" diameter can be accommodated on press shown. Filling boxes using same feed hopper available in variable widths and heights.

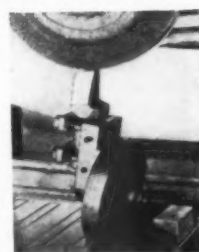
STRUCTURAL STEEL LIFTING HOOK

beth Iron Works, Elizabeth, N. J. "Diamond Torque Hook," which employs torque action principle, is said to make possible lifting and nest-stacking steel shapes in one operation, thus effecting time saving. As load becomes greater so does grips of hooks. Literature available.

NEW hook for lifting structural steel shapes such as beams, girders, channels, etc., is announced by Eliza-

TOOL GRINDING FIXTURE

AN All-Purpose tool grinding fixture for the precision grinding of lathe tools, screw machine form tools, shaper, planer, milling machine or any angle cutting tools is announced by George Scherr Co., 200 Lafayette St., New York 12, N. Y. Fixture works on new patented principle involving use of compound angles, and may be used to grind carbon, alloy and tungsten carbide tool bits, from 1/8" to 1 1/4". Inside and outside threading and recess tools and form tools may also be ground.



FAST-CURING INSULATING VARNISH

up to 50% yet which involves no change in curing equipment, is announced by Irvington Varnish & Insulator Co., Irvington, N. J. It is said to provide greater dip-tank and storage stability. Typical curing schedule in standard convection ovens, based on actual coil curing, is placed at 2-4 hours at 285°F; 3-5 hours at 260°F; 4-6 hours at 250°F. Use of infra-red equipment will reduce curing time.

HARVEL 912C, a new internal-curing insulating phenol-aldehyde varnish which is claimed to cut curing time

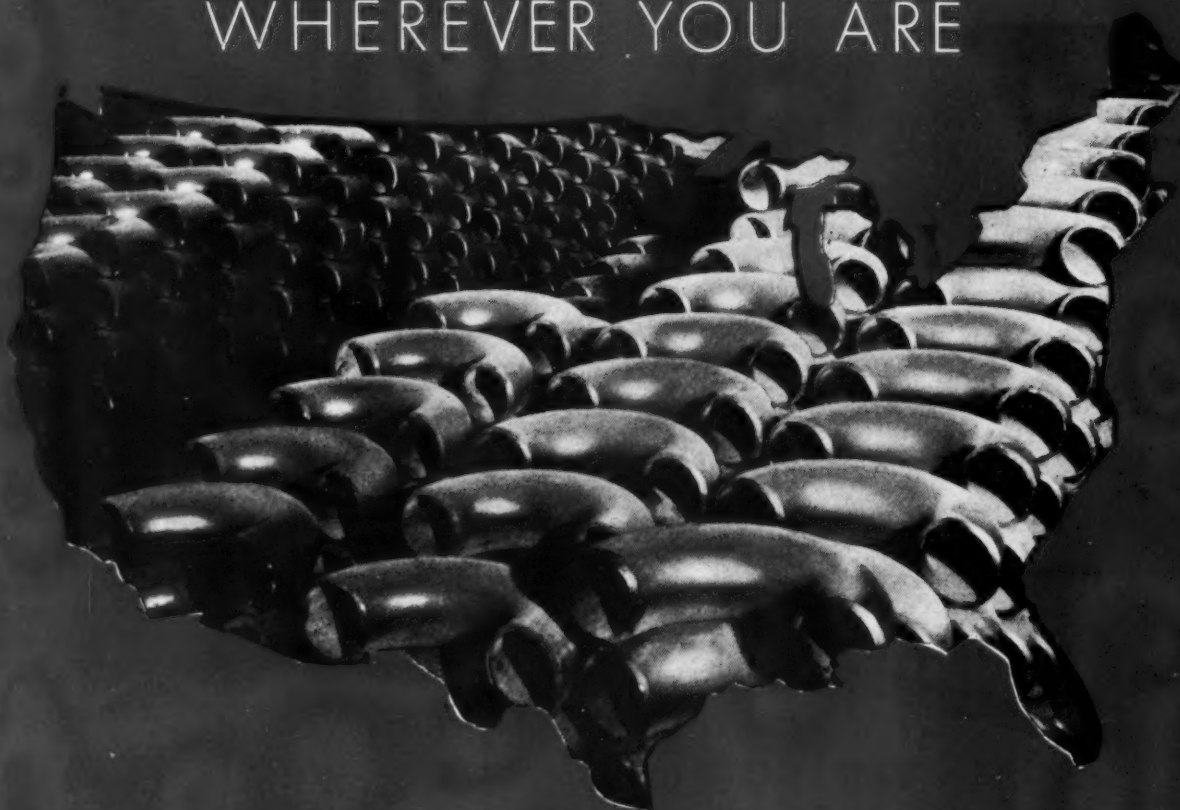
CLAMPING JIGS FOR SMALL PARTS

TWO new "Miniature" Cone-Lok clamping jigs to tool very small parts are announced by N. A. Woodworth Co., 1300 E. Nine Mile Rd., Detroit 20, Mich. Jigs are said to be small, rugged, safe, versatile and to possess a minimum of moving parts. Available for working spaces of 1" x 1" x 1" and 1" x 2" x 1". Moving parts operate in oil bath.



(Continued on page 142)

WHEREVER YOU ARE



the welding fittings you want
when you want them

FOR quick delivery from complete, on-the-spot warehouse stocks of welding fittings call your nearest Tube Turns distributor. He is the important link of a truly transcontinental distribution system that considers every industrial requirement. Your Tube Turns distributor, carefully selected because of his recognized high standing as an established supply man, can provide valuable help in any discussion on the subject of welded piping systems. Backing up his well-trained personnel, he has the full support of strategically located district office men and the engineering staff of Tube Turns'

world headquarters at Louisville, Kentucky. Here is a service that you can use. Keep a Catalog 111 handy for ready reference and select from its more than 4000 listed items just what you need in Tube-Turn seamless welding fittings and flanges. If you don't have a copy of this famous 240-page book . . . get one from your distributor. If you don't have his name . . . we'll furnish it at once. Write, phone, or wire. NOW!

TUBE TURNS (Inc.) Louisville 1, Kentucky. District Offices: New York, Washington, D. C., Philadelphia, Pittsburgh, Cleveland, Detroit, Chicago, Houston, San Francisco, Seattle, Los Angeles.

TUBE-TURN

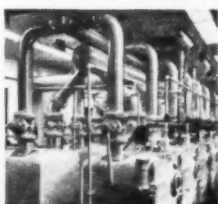


Welding Fittings and Flanges

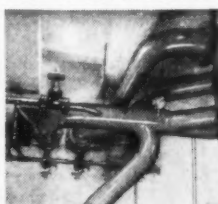
PIPING PERMANENCE SINCE 1927



PETROLEUM



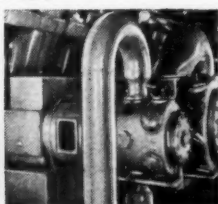
CHEMICAL



GENERAL PIPING



SHIPBUILDING



POWER



EQUIPMENT



STYLE RR50

**NOT
THEY ARE EXPENDABLE**

PROTECT EYES WITH WILLSON CUP GOGGLES



Two way ventilation inside lens through sidescreen and slotted ring keeps fogging to minimum.

The tougher the job, the more your men will appreciate the dependable protection of WILLSON RR50 cup goggles.

Heat treated Super-Tough* lenses in durable plastic eye cups, provide both front and side protection against steel chips, splashes of molten metal and similar hazards encountered in chipping, riveting, casting and such occupations. A specially designed resilient spacer ring under the lens provides a greater factor of safety when the lens is subjected to severe impact.

For utmost comfort in a goggle of this type, the eye cups are molded to fit the eye cavities. The nose bridge can be adjusted for correct spacing between the eye cups and does not ride the nose, while snug fit without pressure is assured by an adjustable headband. Dual ventilation gives through draft by means of a perforated sideshield, and over the lens surface through a slotted retaining ring.

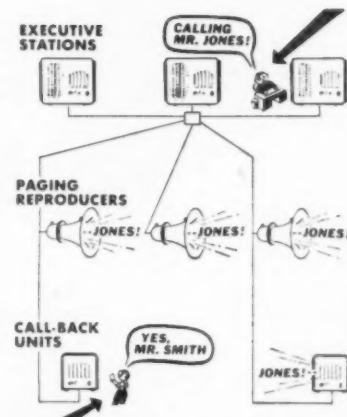
*T.M. Reg. U. S. Pat. Off.

For help on eye protection problems get in touch with your Willson distributor or write direct to Willson Products, Inc., 221 Washington St., Reading, Pa.



WILLSON
DOUBLE
PRODUCTS, INCORPORATED
READING, PA., U.S.A. Established 1870

EXECUTONE UNIT



MODEL C-18, combined call-back and sound reproducer unit for use with high noise level coverage industrial communication systems, is announced by Executone, Inc., 415 Lexington Ave., New York 17. Used with combination intercom and amplified voice-paging systems, unit permits persons called to converse directly with executive from call-back reproducer stations. Other amplified reproducers and call-back units are automatically silenced during 2-way conversation to avoid interruption.

SYNTHETIC PAINT RESIN



NEW synthetic copolymer resin, developed by Research Laboratory of Good-year Tire & Rubber Co., Akron, Ohio, is claimed to conserve natural oils and resins in the manufacture of indoor paints and to result in an improved product. The new resin, called Pliolite S-5, will be marketed by the Chemical Products Div. for use in acid and alkali resistant coatings, concrete floor enamels, architectural finishes, primers, baking enamels, oil and grease-resistant coatings for water tubs, ship bottoms and a number of other uses.

Pliolite S-5 is said to be soluble in aromatic hydrocarbons, and solutions will tolerate considerable dilution with cheap petroleum thinners without separation or precipitation of pigments. Features include: high resistance to moisture, acid alkalies and other corrosive chemicals; non-toxicity; low solvent retention; flexibility with a minimum of plasticizer; good thermal stability; abrasion and scrubbing resistance; good aging characteristics. Illustration shows rapid method of making paint — pigment being incorporated in Pliolite S-5 resin.

(Continued on page 144)



One Of Wire Rope's Toughest Jobs!

THIS huge earth mover, known as a walking dragline, operating in a coal strip-mine, scoops up 6 tons of earth at every swing, each 50 to 60 seconds, day in and day out. Its efficiency---in fact, its ability to perform continuously month after month, year upon year---depends largely on a few strands of wire rope. *This is one of the toughest jobs which wire rope is called upon to perform.*

Through these cables is transmitted all the power of a 400 horsepower Diesel engine, to swing a 160 foot steel boom and a truck size drag bucket. The wire

from which this cable is made must be tough and strong---must resist abrasion---must be uniform in gauge and possess flexibility and other positive characteristics. These are the salient reasons why these cables are made from Youngstown's Yolectro High Carbon Rope Wire.

Like all its wire mill products, the wire supplied by Youngstown to wire rope manufacturers is of finest quality steel, refined, rolled and drawn to exact specifications. Youngstown wire can be furnished now to your specifications. Write, wire or phone our nearest branch.

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN 1, OHIO

Export Office . . . 500 Fifth Ave., New York

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS



Wire - Nails - Bars - Rods - Sheets -
Plates - Conduit - Pipe and Tubular
Products - Electrolytic Tin Plate -
Coke Tin Plate-Tie Plates and Spikes.



HERE *you need an* ARMOURCLAD FIBRE COMBINATION DISC!

Faster-working Armour Abrasives Mean More Production

In the days ahead, competition will be keen. To get increased volume you'll need the fastest tools and the best abrasives possible.

For better, faster finishing there are *specialized* ARMOUR ABRASIVES designed to do a better job at less cost. The faster, sharper, cooler-cutting Armourclad Fibre Combination Disc is only one of Armour's *complete* line of better metal-working abrasives.

It will pay you to call on Armour's experienced technicians. They will gladly help you choose the abrasives and methods which do your jobs best.



ARMOUR
Sandpaper
WORKS

DIVISION OF ARMOUR AND COMPANY
1355 West 31st Street • Chicago 9, Illinois

THREAD RING GAGE

NEW type adjustable thread ring gage, said to provide greater accuracy and longer life, is announced by N. A. Woodworth Co., 1300 E. Nine Mile Rd., Detroit 20, Mich. It

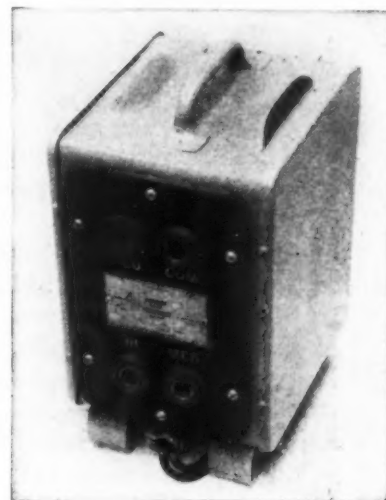
is claimed to maintain roundness through maximum range of adjustment because it distributes wear over the full thread. Increased wear life of 2½-5 times is claimed. Weight is said to be 50% less than conventional gages. Overall dimensions conform with usual thread ring sizes. Folder 46R available.



SAFETY HOOK FOR TOWER WORKERS

NEW safety hook for towermen working from hanging ladders is announced by R. H. Buhrke Co., 4701 W. Grand Ave., Chicago 39, Ill. Safety strap is threaded through Dee ring of hook assembly which is secured to ladder rung. Vertical changes are made by shifting snap hook to higher or lower rungs without removing safety strap. Hook assembly functions under load only if towerman loses footing and provides maximum freedom of movement with safety. Literature available.

PORTABLE BRAZER



FOR making lap joints in copper strap, attaching terminals to cable, brazing coil ends and general copper smithing work, a new portable 5 kva brazer that weighs only 30 lbs. is announced by Westinghouse Electric Corp., Pittsburgh, Pa. It requires connection to a 220-volt source, consists of a transformer, voltage selectors, controls and carbon-tipped tongs. Outlets on control panel provide for 8, 6 or 4 volts. Unit is cooled by natural air circulation. Brazing alloy may be applied in either rod or ribbon form.

(Continued on page 148)

SKILSAW CUTS COSTS all these ways...



SPEEDS PRODUCTION . . . SKILSAW
readily fits a variety of jigs or fixtures, quickly cuts sheet
metals, plastics, bonded woods with closest precision.
(photo from CURTISS-WRIGHT CORPORATION, Airplane Division)



SPEEDS MAINTENANCE . . . SKILSAW
rips up old flooring, removes mortar before tuck pointing,
saves replacement lumber 10 times faster than by hand.



**ASK YOUR DISTRIBUTOR TODAY
ABOUT A DEMONSTRATION!**

SPEEDS NEW BUILDING . . . SKILSAW
makes every cut in construction faster, better, easier... saves
time on every step from foundation forms to rafters.



SKILSAW, INC., 5033-43 Elston Avenue, Chicago 30, Ill.
Factory Branches in All Principal Cities

PORTABLE ELECTRIC
SKILTOOLS
MADE BY SKILSAW, INC.



SKILSAWS



SKILSANDERS



SKILNIBBLER



SKILGRINDERS



SKILDRILLS

At little or no extra cost
Get Double Protection
 against Motor Burnouts from Overloads
 or Single Phasing by installing
FUSETRONS

OF COURSE, larger motors are protected with thermal cutout or overload relays. They save many motors, but experience shows that such mechanical devices sometimes stick or fail to operate—and a motor burns out.

You can give motors **DOUBLE PROTECTION** against burnout from **SINGLE PHASING** or any dangerous electrical **OVERLOAD**, simply by replacing fuses used for short-circuit protection with *Fusetrons* of motor-running protection size.

Fusetrons give same short-circuit protection as fuses and should thermals or relays fail to operate for any reason the Fusetrons will act independently to save the motor.

● **Why this double protection**

COSTS LITTLE OR NOTHING

Large size fuses are replaced with **SMALLER** size Fusetrons. This means a step down in the price range.

For example: The lowest cost 100 amp, 250 volt fuse costs approximately \$0.34. A 60 amp. Fusetron to replace it costs about \$0.30—(BUSS Fuse Reducers to make the change possible costs but little and need never be replaced).

That is why you need not worry about the cost of replacing fuses with Fusetrons even though installing Fusetrons means that you **REDUCE MANY MANY TIMES THE CHANCE OF HAVING A MOTOR BURN OUT.**

On new installations you **ACTUALLY SAVE MONEY** because proper size switches or panels are installed instead of oversize equipment needed to take fuses large enough to hold motor starting current. The smaller size Fusetrons used further reduce costs.

● **Why Fusetrons Can**

Give Motor-Burnout Protection

Fusetrons have a tremendous time-lag, due to combining a thermal cutout with a fuse. This means they can be used in a size close to the actual running current of the motor because they will not open on the motor starting current.

Ordinary fuses or circuit protection devices—because they lack sufficient time-lag, must be installed oversize to prevent their opening on the motor starting current. They can give only short-circuit protection to the wiring. They cannot operate to protect either the motor or the starter until the current flowing is far in excess of the motor-running current.

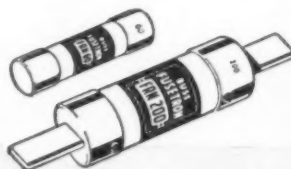
But when Fusetrons of proper size are used, any current dangerously in excess of the normal motor-running current will cause them to open. Thus they back up the overload device already installed. They double the protection the motor has against burnout.

● **Provide simplest way to
prevent damage from Single Phasing**

When single phasing occurs, the current flowing through the motor and through the Fusetron in the remaining phase increases about 100%. (Theoretically 73% but change in efficiency and power factor make it about 100%).

This 100% overload on Fusetrons of motor-running protection size opens them and stops the flow of current.

So to be **DOUBLY SURE** that motors won't be lost should single phasing occur, just replace fuses used for short-circuit protection with Fusetrons of a size near to the actual running current of the motor.



BUSS

HERE'S PROOF

Records of Joslyn Mfg.
& Sy. Co., Chicago,
show that . . .

Fusetrons PREVENT MOTOR BURNOUTS

"In our plant we have 710 motors, ranging in size from 1/60th to 450 h. p. Before 1938, we used renewable fuses in all circuits, with thermal relays for individual motor protection.

"Beginning in 1938, we changed all our fuses to Fusetrons, using regular fuse sizes in mains and feeders and motor protection sizes in the motor circuits. Our records show that for the 12 months ending August 31, 1945, we had only two motor burnouts, both on the same motor. This is a 2 horsepower motor driving an electric hoist with an actual load of about 3 horsepower. Therefore, we are unable to operate the motor if we use the correct size Fusetron to protect it, and since we have been unable to get a 3 horsepower motor to replace it, due to mechanical features, the only thing we could do was let this motor run overloaded and eventually burn out.

"Our Electrical Department keeps a complete record on blown Fusetrons, giving full details on each blow, with a place for remarks by the maintenance man who makes the replacement. These records show that for the month of August, 1945, we blew 63 Fusetrons, ranging in size from 2-1/4 ampere to 100 ampere, representing 43 shutdowns. From the remarks made by the maintenance men on their reports, it seems likely that probably half of these shutdowns would have resulted in burned out motors had the Fusetrons not blown."

Peter Joyce, Chief Electrician,
Joslyn Manufacturing & Supply Co.,
Chicago, Illinois



**What is the
FUSETRON?**

The Fusetron is a DUAL element device—A Fuse to which is added a Thermal Cutout. The result is a fuse with tremendous time-lag and much less electrical resistance.

Fusetrons have the same degree of Underwriters' Laboratories approval for both motor-running and circuit-protection as the most expensive devices made. Fit standard fuse blocks.

Fusetrons are made to same dimensions as ordinary fuses and fit all standard fuse holders.

They are obtainable in all sizes from 1/10 to 600 ampere—in both 250 and 600 volt types.

Also obtainable in plug type and Tamper-resisting type (Fustats) for 125 volt circuits. Their Cost is Surprisingly Low.

Fusetrons Protect Against Work Stoppage in Many Ways if Installed Throughout the Entire Electrical System

★ Entirely wipe out needless blows caused by motor starting currents or other harmless overloads

Fusetrons have tremendous time-lag. They hold 500% load more than ten seconds whereas most sizes of ordinary fuses blow in less than one second. They won't open on starting currents or harmless overloads (heavy overloads for a short time or light overloads for a longer time). Fusetrons won't shut down a circuit needlessly.

★ Give thermal protection to panelboards and switches

The thermal cutout in Fusetrons opens at 280° F. Thus if poor contact heat develops from any cause, the circuit is opened and heating stopped before damage can be done.

Ordinary fuses can't so protect because the temperature of the link must reach 786° F. before it will melt out.

Fusetrons warn that maintenance is needed instead of permitting panel or switch to be damaged by poor contact.

★ Prevent needless blows caused by heating in panels and switches

Fuses have 55 to 140% greater electrical resistance at full load than Fusetrons, hence Fusetrons produce less heat than any fuses. They eliminate useless shutdowns caused by fuses running too hot.

★ Permit use of larger motors or adding more motors on circuit WITHOUT installing larger switch or panel

The operating load on Fusetrons can be close to their ampere rating because Fusetrons hold starting currents—but ordinary fuses must be installed oversize because they lack sufficient time-lag to hold starting currents.

By replacing oversize fuses with Fusetrons, you can load panels or switches near their capacity. A larger motor or additional motors can be installed without the trouble or expense of changing the panel or switch.

★ On new installations, use Proper size switches and panels instead of oversize

With ordinary fuses, switches and panels must be oversize because fuses larger than the operating load must be used to hold starting currents.

But Fusetrons hold starting currents, therefore, PROPER size switches and panels to fit the load can be installed, saving money and space.

★ Double burnout protection for large motors (See opposite page)

★ Make protection of SMALL motors simple and inexpensive

Install a Fusetron of proper size anywhere in the circuit to handle ONLY the motor current—that's ALL—to safeguard against trouble and cost and lost work caused by the burnout of even a SMALL MOTOR.

★ Protect coils, transformers and solenoids against burnout

Install a proper size Fusetron. It won't open on harmless overloads or normal current surges, yet should a dangerous overload occur for any reason it will cut off the current to prevent a burnout.

GET ALL THE FACTS

Get Better Protection—Send The Coupon Now

Even one lost motor or one needless shutdown or one destroyed panel may cost you more than replacing every fuse with a Fusetron. Don't risk such losses. Change over the whole plant to Fusetrons.

BUSSMANN MFG. CO., University at Jefferson, St. Louis 7, Mo.

BUSSMANN Mfg. Co. University at Jefferson
St. Louis 7, Mo. (Division McGraw Electric Co.)
Please send me complete facts about BUSS Fusetrons.

Name _____
Title _____
Company _____
Address _____ State _____
City _____

FUSETRONS

SOLD THROUGH WHOLESALERS



● The above statement is typical of many reports received from safety directors and plant managers about CESCO's improved face shield with the new plastic headgear.

FOUR GOOD REASONS why this CESCO Shield gives better service:

1. **Durable**—the newly designed headgear is made of flexible, long-wearing plastic, which has proved more durable than other headgear materials.
2. **Clear, tough windows**—made of sturdy plastacele. An exclusive, simple method of attachment permits quick window replacement.
3. **Comfortable**—the flexibility of the plastic headgear and the simple adjustment to varying head sizes assure an easy, comfortable fit on every wearer.
4. **Clean and sanitary**—the plastic headgear does not absorb dirt or moisture, and is easily cleaned with a cloth.

4 styles available
—Write today for
literature and prices



CHICAGO EYE SHIELD CO.
2320 Warren Boulevard
Chicago 12, Illinois



WATER SOLUBLE GRINDING FLUID

Chemical Products Corp., Conshohocken, Pa. "Microgrind 70" is recommended for abrasive operations on all types of steel and most other metals. It is claimed that it cannot develop rancidity or odors even when mixed with extremely hard water or when used for grinding cast iron, and that it can be used for three months or more without change if make-up is added periodically. Further claim is that fluid cannot cause build-up on machines, but helps to keep them clean. Virtual elimination of cracks, burns, and distortion due to grinding and increased wheel life are claimed.

NEW water soluble grinding fluid for use with the Quaker Microgrind Process is announced by Quaker

CONTROL VALVES



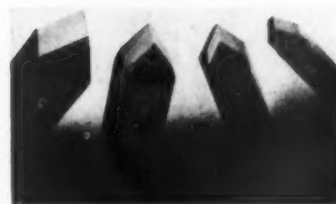
FIRST of new line of air and hydraulic control valves are three units designed by Hanna Engineering Works, 1765 Elston Ave., Chicago 22, Ill. Unitite Jr., for tubing and light piping applications, is packless 1/4" capacity valve for 4-way operation, but may be used as a 3-way valve by plugging one port; available for manifold, column or panel mounting for air, oil or water pressures up to 250 p.s.i. Foot-operated model is packless control for air and oil hydraulic cylinder applications; it comes in 3/8", 1/2", 3/4" and 1" sizes, with single pedal for constant cycles or split pedal that holds position until tripped for reversal; operates on 250 psi air pressure or 1000 psi oil pressure. Two-Direction Speed Control Valve provides for adjustable control of inflow and outflow of air or oil independently to and from one side of piston; working pressures are 250 psi for air cylinders and 1000 psi for hydraulic. Pipe sizes are 1/4", 3/8", 1/2", 3/4", and 1". Printed matter available.

JACK KNIFE GRAVITY CONVEYOR

announced by Island Equipment Corp., 101 Park Ave., New York City 17. Light, portable, and adjustable it can be rolled to any job and adjusted to desired height from 6" to 52". One end can be made lower than the other to give greater or less pitch to table top.

COMPLETE light duty unit known as Jack Knife Gravity Conveyor, with legs and conveyor in one unit, is announced by Independent Pneumatic Tool Co., Chicago, Ill. Rotatively striking impact jaws, set at a wide radius from spindle center to reduce stress, and a short rigid spindle shank that delivers blow close to work are principles of the impact mechanism. Wrench weighs 3 3/4 lbs., is 5 7/8" long for comfortable, one-hand operation with greatly reduced torque reaction. Circular No. 565 available.

THREADING TOOLS



NEW line of standard carbide tipped threading tools, style T-15, is announced by Carboloy Co. Inc., Detroit, Mich. Tools are of the 60° V-nose type. Tips are of Carboloy Grade 78-B, a tough, wear-resistant grade of carbide said to be particularly suitable for long run threading of steel parts. Shank sizes include 3/8", 1/2", 5/8", and 3/4" square styles. Shank lengths run from 2 1/2" to 4 1/2". Primary clearance at nose is 3°, with secondary clearance of 6°.

ALL-BRONZE GEAR PUMPS

NEW "GB" Series all-bronze gear pump, which can be used for pumping water, oils, solvents, salt solutions, chemicals and other liquids of corrosive or non-corrosive nature which do not affect bronze, is announced by Gray-Mills Corp., Evanston, Ill. Machined to close tolerances with precise gear construction for high performance efficiency, pump has a maximum pressure of 300 p.s.i.; at 1750 rpm, volume is 6 gpm; discharge is 1/2". It may be operated by pulley or direct drive and can be mounted internally or externally. Available as a pump only; a pump and motor; and as a complete portable pumping unit with motor and tank.

PNEUMATIC IMPACT WRENCH



NEW Thor pneumatic impact wrench, for driving and removing nuts, bolts, and cap screws up to 3/8" thread size, is announced by Independent Pneumatic Tool Co., Chicago, Ill. Rotatively striking impact jaws, set at a wide radius from spindle center to reduce stress, and a short rigid spindle shank that delivers blow close to work are principles of the impact mechanism. Wrench weighs 3 3/4 lbs., is 5 7/8" long for comfortable, one-hand operation with greatly reduced torque reaction. Circular No. 565 available.

(Continued on page 150)



PROBLEM: Manufacturer of hydraulic pressure system pumps for 3000-psi service sought a hydraulic oil that (1) would resist oxidation at the 135° F. pump-operating temperature; (2) could be safely used for run-in test purposes; and (3) would have inherent rust-preventive qualities so it could be used as a "shipping" oil.

SOLUTION: When the Shell Lubrication Engineer studied the problem, he recommended a Shell Tellus Oil. The specifications of this oil satisfied the pump maker on points (1) and (2), but he was skeptical of

the rust-preventive qualities. A "storage" test was made, and, when Tellus-filled pumps were inspected, no sign of rusting was found. Convinced, the pump maker now uses Shell Tellus Oil exclusively.

CONCLUSION: It pays to consult the Shell Lubrication Engineer, regardless of the nature or size of your lubricating problem. Write for informative literature on Shell Hydraulic Oils. Shell Oil Company, Incorporated, 50 West 50th Street, New York 20, New York; or 100 Bush Street, San Francisco 6, California.

SHELL HYDRAULIC OILS



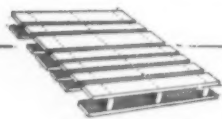


HEADGEAR HEADACHE

by today's standards

NEW "GENERALIFT" PALLETS

Millions of pallets were used by the armed forces. They saved from 50% to 90% in materials handling. We are now in full production of pallets for all industry. Our engineers will design a pallet best suited to your specific needs. Write today for Pallet Book.

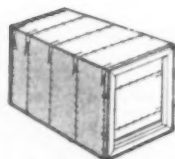


"Generalift" Pallet

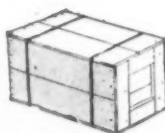


General Corrugated Box

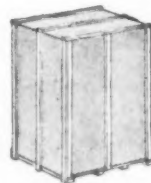
NOTE: Shortage of timber products today is even more critical than during the war. This is due to adverse weather conditions, labor difficulties, pricing maladjustments, ear-marking and priority of lumber for erection of homes for veterans, etc. For these reasons, we, like so many others, cannot guarantee production and shipment in terms of usual schedules.



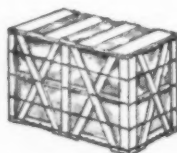
General All-Bound Box



General Nailed Box



General Cleated Corrugated Container



General Wirebound Crate

ENGINEERED SHIPPING CONTAINERS

General BOX COMPANY

GENERAL OFFICES: 48 West Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon.

Continental Box Company, Inc., Houston, Dallas.

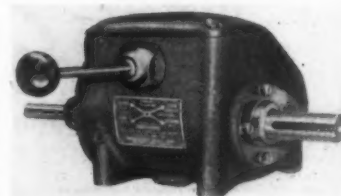
Yards and yards of material of the finest sheerest silk—carefully, almost religiously wrapped—provide the trim, tight-fitting turban of the celebrated Sikhs.

Its claim to fame is that it is unique, distinctive. It certainly is not practical or serviceable nor in keeping with the quick tempo of the times. Likewise, many fine products are also packaged in out-of-date containers that are costly and laboriously assembled.

Bring your packing problems to us. Our engineers will be glad to help you design a modern container that really protects your product, that is actually a "part of the product."

Learn how you too can cut costs, conserve man-hours and speed production. It's a story of vital interest to you. Write today.

TRANSMISSION FOR FLAT PLATE OR PLATFORM MOUNTING



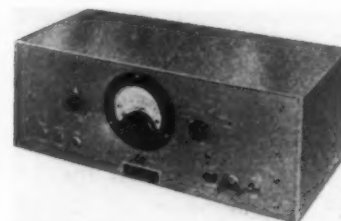
NEW Western transmission, with four bosses, drilled and tapped, so it can be mounted on a flat plate or platform, is announced by Western Mfg. Co., 3400 Scotten Ave., Detroit, Mich. Unit, identified as "9000 B Series," has 5 h.p. capacity with input speed of 900 r.p.m. Four gear changes are available through one shift lever. Ratios are 1:1, 2:1, 3:1, and 4:1.

NEW RESISTOR MEASURING INSTRUMENT

ELECTRONIC measuring instrument, Clippard Automatic Resistance Comparator, type PR-4, to speed inspection, check, grade and match resistors,

is announced by Clippard Instrument Laboratory, Inc., 1440 Chase Ave., Cincinnati 23, Ohio. It is recommended for resistor manufacturers' production lines and for electrical, radio and electronics manufacturers, and parts jobbers. Instrument is housed in steel cabinet measuring 18" x 12" x 12". Range is 100 ohms to 100 megohms, with maximum voltage across standard resistor of 12 volts. Maximum wattage on resistor to be tested is 36/R standard.

FREQUENCY METER & TACHOMETER



DEVICE for measuring frequency of a-c voltages over entire audible frequency spectrum is announced by Communication Measurements Laboratory, 120 Greenwich St., New York 6, N. Y. Used with new "photo-beam converter," Model 1800 becomes accurate electronic tachometer for measuring speed of rotating or reciprocal mechanisms. Speeds in excess of 1 million r.p.m. can be measured. Model is said to measure frequency of positive or negative "radar-type" pulses from a fraction of a micro-second to more than 50 micro-seconds in duration. Accuracy is substantially 0.1% to 0.2%, unaffected by line-voltage variations of 105-125 volts, by temperature variations from 0°C-70°C, or by high relative humidity. Literature available.

(Continued on page 154)

*There's a Built-in Quality
market for*
DOWNSPOUTS - GUTTERS - ELBOWS
OF Superior's
STAINLESS STRIP STEEL

*-and throughout
the modern home....*

Stainless means quality, in every application for better living in today's American home. And SUPERIOR Stainless Strip Steel has a special meaning of quality to the fabricator. Superior's long coils are uniform grade by grade; in composition, dimensions, temper and finish desired, you get what you want every time. Make Superior your choice for the coming mass stainless demand!

For your files—the detailed
Superior Stainless Brochure!



Superior Steel
CORPORATION
CLEVELAND, OHIO

● LIKE THE HALLMARK of the *Greenwich Royal Armory*
ON FINE ARMOR

KOVEN



*Has Been the Hallmark
of Superior*
**CHEMICAL
EQUIPMENT**
Since 1881

You can measure value by usefulness and durability. Even as the warrior of yesterday depended on the armor makers for reliable battle gear, so do the chemical manufacturers of today depend on KOVEN for reliability in equipment. For over half a century, KOVEN has been designing and manufacturing individualized equipment made to exact specifications.

Leading industrialists turn to KOVEN for help in solving their problems. A consultation with an experienced KOVEN engineer may be had by calling or writing for an appointment today. This service does not obligate you in any way. KOVEN equipment includes: pressure vessels, extractors, mixers, stills, condensers, kettles, tanks, chutes, containers, stacks, coils.

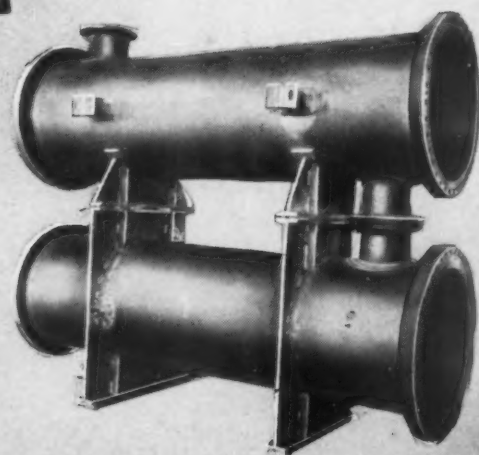
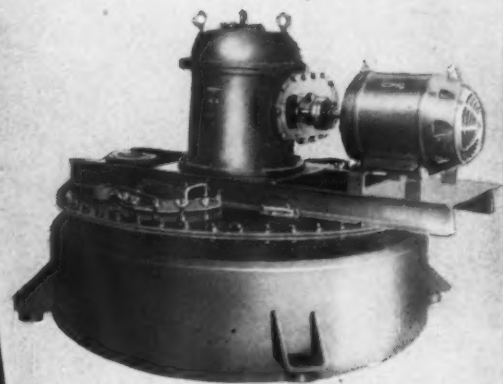
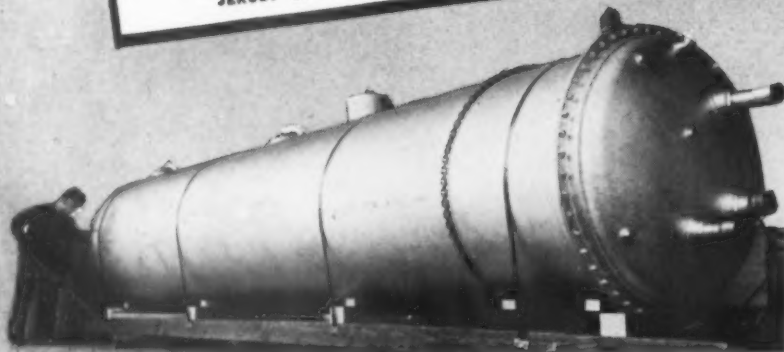
L. O. KOVEN & BRO., INC.
154 OGDEN AVE. • JERSEY CITY 7, N. J.



PLANTS:

JERSEY CITY, N. J.

DOVER, N. J.





Cuts
FASTENING TIME
in half

TWIN, parallel threads make the big difference. The sharp, clean threads spiral the root from opposite sides of the screw, providing greatly increased thread pitch with only nominal driving torque. With a single turn of the driver, *twice as much thread area enters the material* than with conventional, single thread screws. The stripping torque is substantially increased by this exclusive type of thread construction. That's why TWIN-FAST Screws result in faster production, sounder construction!

Write today for samples and further details.



Patents 2314390, 2314391, 2373878,
2373948, Canadian Patents 500635, 500636. Other patents pending.

3 OTHER MAJOR IMPROVEMENTS

Relieved shank diameter tends to prevent stresses which might cause immediate or eventual splitting or fissures. Method of manufacture assures perfect shank uniformity—perfect fit.

Cylindrical construction (not tapered) increases thread area for tighter seating, greater holding power. Often, fewer and shorter screws may be used.

Single, sharp, centered point where twin threads terminate assures quick starting, self-centering, balanced driving. No eccentric "crawling"—no misalignment!

Twin-Fast Screws come in steel or brass with round, flat, or oval heads—standard sizes and thread count.

The Blake & Johnson Company makes many thousands of different types of fastening devices in all standard metals.

THE BLAKE & JOHNSON COMPANY SINCE 1849
WATERVILLE, CONNECTICUT

"Take it away" with CM HERC=ALLOY SLING CHAIN

Every Inswell electric-welded link in this CM Herc-Alloy steel chain personifies safety and lifting strength. From the white hot ingots in the nation's steel mills to the finished structural girders for our skyscrapers, CM Herc-Alloy Sling Chains have been doing a handling job that ranks them "tops" in industry... "tops" in dollar value, service life, maximum safety or any other yardstick of measuring.

Ask your mill supply distributor about the particular CM Herc-Alloy Sling Chain for your job and learn first hand the reasons why the top names in American industry have been using them for years.



COLUMBUS=McKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corporation)

GENERAL OFFICES AND FACTORIES: 136 Fremont Ave., TONAWANDA, N. Y.

SALES OFFICES: New York, Chicago and Cleveland

PRES-A-PLY LABELS



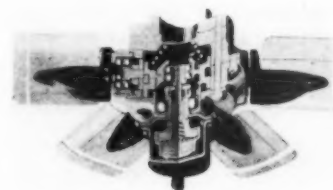
POST-war line of Pres-A-Ply labels, for marking job numbers, blueprint numbers, part numbers or any other desired information on all smooth metal, plastic, glass, rubber, painted or polished parts, is announced by Dennison Mfg. Co., Framingham, Mass. Labels adhere without moistening to all clean, smooth and non-porous surface, and may be peeled off readily without soaking or scraping. Pres-A-Ply labels are available in three shapes and sixteen sizes, packaged in single rolls and in multiple width sheets for convenience in typing.

PROCESS SIMPLIFIES SALT REMOVAL

LIQUID carburizing process, called Karbo Kasing, is claimed to make it easy to remove all traces of salt from

oil-quenched work. Equipment regulates small flow of oxygen into molten bath containing Karbo Kase Salt, a water soluble powdered cyanide base salt incorporated with a carbon cover. Hot water washing only is required. Salt replenishment is between 5%-10% daily. Little or no sludge is produced. Melting point is 1150°F, working range 1300°-1750°F. Park Chemical Co., 8074 Military Ave., Detroit 4, Mich.

FAN INSTALLATION ADAPTER



FRONT operating adapter design of the thermal power element to simplify installation of a Thermo-Control fan in existing motor mounts is announced by Thermo-Aire Division, Evans Products Co., 15310 Fullerton Ave., Detroit 27, Mich. The Thermo-Control fan is a variable pitch self-adjusting fan operated by a built-in thermal power element. It is recommended for mobile and stationary heavy-duty industrial equipment, such as large trucks and buses, diesel-electric locomotives, generators, pumping units, etc., the variable pitch, self-adjusting Thermo-Control fan is available in 4, 6 and 8 blades models. To install new model, it is necessary only to remove old fan from fan hub and remount Thermo-Control with correct mounting flange to fit the hub.

(Continued on page 156)

Kryolith

REG. U.S. PAT. OFF.

NATURAL GREENLAND CRYOLITE

*for the Glass
and Ceramic
Industries*

Kryolith, which is our trade name for natural Cryolite, is a double salt of sodium fluoride and aluminum fluoride. It was originally a basic ingredient in the manufacture of soda, but today it has many and varied uses.

For many years Kryolith has been employed as an opacifier and fluxing agent in the ceramic and glass industries. Manufacture of ceramics is aided by Kryolith's long fluxing action, high degree of opacification and quick reduction of batch due to the low melting point. Manufacture of glass is aided by Kryolith's capacity to dissolve coloring oxides and to improve lustre and clarity.

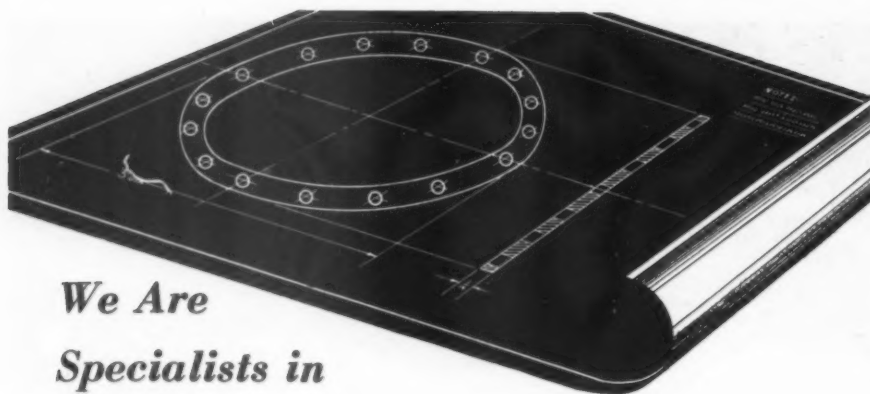
Kryolith comes packed in 500 lb. barrels and 100 lb. bags. For complete information, write today.



**PENNSYLVANIA SALT
MANUFACTURING COMPANY**
Chemicals

1000 WIDENER BUILDING, PHILADELPHIA 7, PA.

New York • Chicago • St. Louis • Pittsburgh • Cincinnati • Minneapolis • Wyandotte • Tacoma



**We Are
Specialists in**

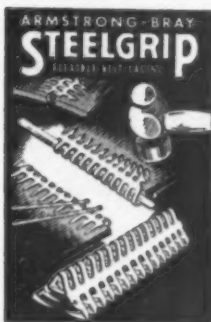
DESIGNING & PRODUCING

SPECIAL WASHERS and SMALL STAMPINGS

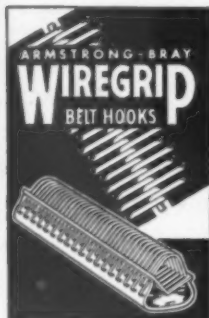
If you have a problem on Special Washers or Small Stampings, send it to us! More than a quarter-century of specialization has given us the "know how" to handle your requirements *capably* and *economically*. Perhaps we already have

the tools that are needed for your next job (we have more than 10,000 sets of tools on hand). If not, our experienced Tool & Die Department will be placed at your disposal. Send us your blueprints or specifications.

THE MASTER PRODUCTS CO.
6400 PARK AVENUE • CLEVELAND 5, OHIO



**Prompt
deliveries**



both types!

WIREGRIP Belt Hooks that can be applied with any make lacing machines, have double (patented) aligning cards that hold hooks in perfect alignment, prevent handling and card-end loss — every hook saleable and usable. Made in 6 sizes.

STEELGRIP Belt Lacing is applied with a hammer. Comes in 11 sizes, in standard boxes, handy packages or long lengths, for wide conveyor belts. Have 2-piece hinged rocker pins.

Write for Catalog

ARMSTRONG-BRAY & CO.

"The Belt Lacing People"

5378 Northwest Highway, Chicago 30, U.S.A.

BETTER Bolts, Packaging and Service



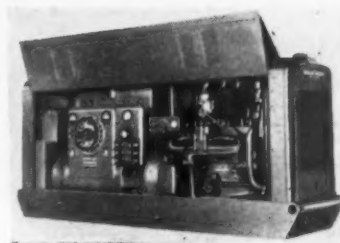
Since
1854

are the reasons for
specifying
CLARK BROS. BOLTS
instead of just "A" Bolt.
You will save money.

CLARK BROS. BOLT CO.

Milldale 1, Connecticut

300 AMP GAS DRIVEN ARC WELDER



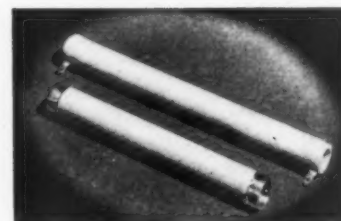
ANNOUNCEMENT of a 300 ampere gas driven arc welder with an in-built auxiliary a.c. generator is announced by Hobart Bros. Co., Troy, Ohio. Combinations of power possible simultaneously are: 110 v, 60 cycle, single phase; 110/200 v, 60 cycle, single phase; 220 v, 60 cycle, three phase, 220 v, 60 cycle, single phase. Generator panel provides receptacles, studs for connecting to power required, a.c. voltmeter with dual scale, frequency meter and rheostat for a.c. voltage control. A. C. generator is available in 6 and 12 KW sizes.

HIGH VISCOSITY METER BODY

NEW electric meter body with sealed armature, said to eliminate external seals and insure better meas-

urements of high viscosity fluids and gassing liquids, is announced by Brown Instrument Co. division of Minneapolis-Honeywell Regulator Co., 4535 Wayne Ave., Philadelphia, Pa. Neither seal pots nor liquid purging are required. Meter is essentially self-venting. In addition to high viscosity measuring, it is said to be suitable for measuring hydrofluoric acid, mixtures of hydrofluoric acid and hydrocarbons, and volatile fluids with other characteristics.

VITREOUS ENAMELED RESISTORS



VITROHM "M" vitreous enameled resistors, for use on power type resistor applications where severe operating conditions are encountered, are announced by Ward Leonard Electric Co., Mt. Vernon, N. Y. Resistors are said to meet all requirements of U. S. Army-Navy Specification Jan-R-26 for Characteristic "F", and are available in ferrule, tab and screw terminal types with power ratings from 8 to 155 watts and capable of operation continuously at 275°C. Resistance values are obtainable in sizes from .1 to 80,000 ohms, with resistance tolerances for 1 ohm and above of plus or minus 5% specified values.

(Continued on page 158)

To do your surfacing jobs better **use NORTON DISC WHEELS**

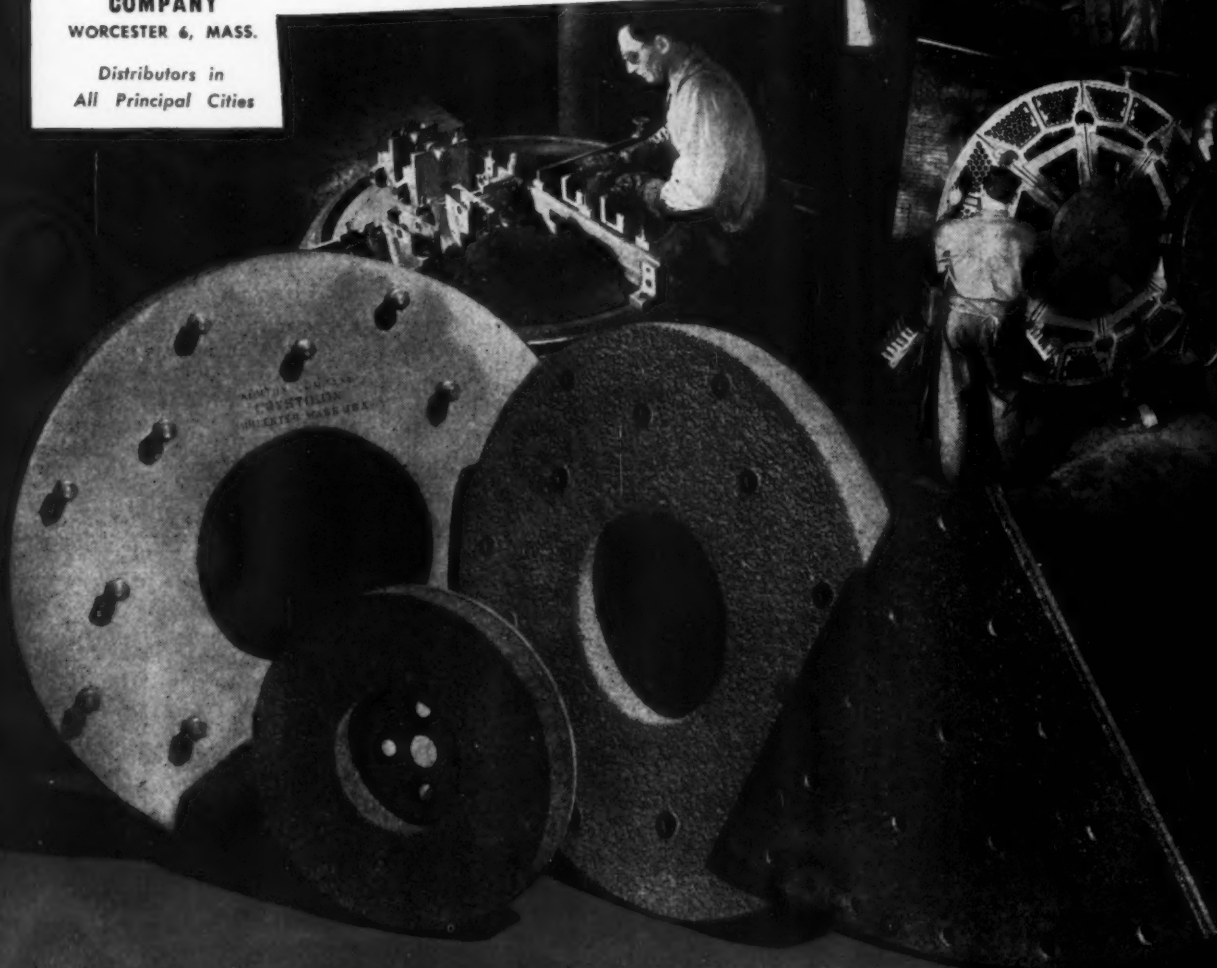
When a Norton abrasive engineer tackles your disc grinding jobs he's not limited to a few styles of discs — he has the complete Norton line of abrasives and bonds to choose from. As a result he can tailor the disc's grinding action to exactly meet your specific conditions — and that means lower surfacing costs.

And what's more, he can take advantage of all the newest Norton developments — such as free-cutting 57 Alundum abrasive and B-5 bond. On many disc grinding jobs, especially surfacing castings, this 57 Alundum, B-5 combination is showing remarkable results.

It will really pay you to let a Norton abrasive engineer make a survey of *all* your disc grinding jobs.

**NORTON
COMPANY**
WORCESTER 6, MASS.

*Distributors in
All Principal Cities*



NORTON ABRASIVES

COULDN'T SLIP IF YOU TRIED TO!



It's the twisted bar that assures safe, sure footing, indoors or out . . . One-piece electroforged construction means rigid strength and minimum maintenance . . . Easy to install, and admits maximum light and air . . . Ideal during and after construction . . . Write for catalog . . .

BLAW-KNOX

ELECTROFORGED

STEEL STAIR TREADS AND GRATING

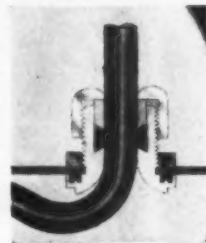
BLAW-KNOX DIVISION of Blaw-Knox Company

2075 FARMERS BANK BUILDING

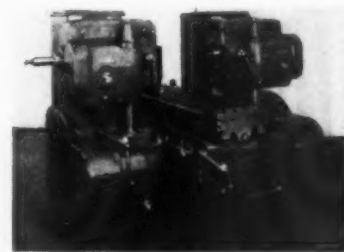
PITTSBURGH 22, PENNA.

CABLE CLAMP

NEW type cable clamp, for use on both rigid and flexible coaxial lines, is announced by H. H. Buggie & Co., Toledo 1, Ohio. Clamp is claimed to be a secure and distortionless anchor for various sizes of jacketed cables and to act as a barrier to flow of moisture on outside of cable cover. It is said to be equally effective when used for radio leads and high or low tension line leads, or for any other lead-through where it is desirable not to cut the cable or line. Smooth finish of metal parts eliminates cutting of cable insulation under severe vibration.



HYDROMATIC MILLING MACHINE



LINE of new hydromatic milling machines, said to be heavier and more powerful, with increased cutting capacity and higher spindle speeds for high speed carbide cutting, is announced by Cincinnati Milling Machine Co., Cincinnati 9, Ohio. Standard machines available in plain and duplex styles in 12 sizes, No. 3-24 to No. 56-90. Seven ranges of spindle speeds are available, with eight speeds within each range. Base has built-in leveling jacks. Write for publication M-1372-1.

ADJUSTABLE CIRCLE CUTTER

ALL-purpose adjustable hole-cutting tool, said to quickly cut smooth large-size holes in wood, steel, brass, hard rubber, aluminum, fibre, plastics and problem materials which might necessitate use of



torches or other expensive equipment, is announced by Bruno Tools, Beverly Hills, Calif. Bruno Adjustable Circle Cutter cuts holes to any diameter from $1\frac{1}{8}$ " to 8" through $\frac{1}{4}$ " thickness in steel or other tough metals and any thickness up to $1\frac{1}{2}$ " in plastics, fibre or wood. Tool is designed to operate in any standard drill press, woodworking machine or suitably mounted spindle machine. Twin blade holder cuts washers, discs, gaskets etc. in one operation.

(Continued on page 160)

ZIP

Through Sheet Metal Work

with
**Black & Decker
Porto-Shears***



CUTS IRREGULAR LINES
STRAIGHT LINES
CURVES DOWN TO $\frac{3}{4}$ " RADIUS

CUTTING OPERATION ALWAYS VISIBLE



**16-Gage
Porto-Shear**

weighs $8\frac{1}{4}$ lbs., has a universal motor and trigger switch with locking pin. The handle can be gripped at any position, top to rear, for easy balance and control.

* Trade-Mark Reg. U.S. Pat. Off.



18-Gage Porto-Shear
weighs $5\frac{1}{4}$ lbs., has universal motor. The switch is conveniently located on compact motor housing which also serves as a handle.

Black & Decker Hole-Saws cut clean round holes in sheet metal, cast iron, wood or any material a hack-saw will cut. Made in 28 sizes, from $\frac{3}{4}$ " to 4".

- Cut Sheet Metals Too Tough For Snips!
- Speed Up Jobs Where Snips are Slow!

Here's the way to put new zip into those sheet metal jobs that are heavy, tedious work with hand snips! Black & Decker Electric Porto-Shears turn out the work in less time . . . at lower cost . . . with cleaner, smoother, more accurate cuts. Fast, powerful shearing action eliminates hard muscular strain . . . makes it easy to follow straight lines, irregular patterns or curves down to a radius of $\frac{3}{4}$ ". And the cutting operation is always visible.

Black & Decker 16-Gage Porto-Shears cut up to rated capacity in steel or galvanized iron . . . about one gage thinner in Monel or stainless . . . 50% above rating in copper, aluminum, lead and other non-ferrous metals. Can be adapted to cut thin plastics. We're doing our best to fill the heavy demand for these tools . . . but occasionally your Black & Decker Distributor may not have them in stock. Check him on them today . . . get full details. For your copy of our complete catalog, write to: The Black & Decker Mfg. Co., 664 Penna. Ave., Towson 4, Md.

LEADING DISTRIBUTORS  EVERYWHERE SELL

Black & Decker
PORTABLE ELECTRIC TOOLS

IDEAL FOR
• factories
• offices
• schools
• hotels
• cafes



For less than

6¢

per square foot

BIRD
Rubberlike[®]
RUNNER

Protects HEAVY TRAFFIC floors

Test Rubberlike on your toughest traffic spot. See how the sturdy corrugations cushion and quiet footsteps, how it cuts cleaning and maintenance costs. Note the "petty-cash" cost; less than 6¢ per sq. ft. This product of Bird research lasts and lasts under constant foot-poundings, gives longer life to good floors, new life to old. No installa-

tion—just unroll. Rubberlike hugs any surface without cementing, won't curl at edges. Makes slippery floors safe. It's non-skid even when wet, a boon where on-the-job splashing are safety hazards. In 25-yard rolls, 36" wide. Ask your supply house or write for free sample to Bird & Son, inc. Dept. 97, East Walpole, Mass. *Reg. U.S. Pat. Off.



BIRD & SON, inc. EAST WALPOLE, MASS.

NEW YORK, SHREVEPORT, LA., CHICAGO

PURE BRISTLE

Paint Brushes

ONE TO FIVE INCHES
WELL STOCKED



WELL MADE



AVAILABLE NOW

SPECIAL: 5" BRUSH, 4 3/4" LONG \$15.00
Write or Call for Other Sizes and Prices.

PAINT-POINT PRODUCTS CO., INC.

99 S. 6th Street, Brooklyn 11, N. Y.
STag 2-4560

Widely Used to Keep Count!



Industry's favorite "Watchdog of Production" since 1906 . . . Redington Counters are widely used on punch presses, pumps, screw machines, packaging machines . . . conveyor lines, can making and box making machinery . . . in fact, all types of machinery . . . and production lines. Easy to install . . . 100% accurate. Write for new catalog.

PROMPT DELIVERY

F. B. REDINGTON CO.

103 S. Sangamon St.

Chicago 7, Ill.

QUARTER-INCH CONTROL PACKLESS VALVE

ILLUSTRATION shows packless 1/4" capacity valve called Hanna Unitite Jr., which is one of a new line of valves for air and hydraulic controls, designed by Hanna Engineering Works, 1765 Elston Ave., Chicago. Precision built and permanently tight it is designed for 4-way operation, but may be used as a 3-way valve by plugging one port. It is suitable for air, oil or water in pressures up to 250 psi. An 80° handle movement gives complete reversal. It is available for manifold, column, or panel mounting.



PORTABLE POWER-DRIVEN STAMPING CONVEYOR

PORTABLE, power-driven, endless belt conveyor has been designed by the Rapids-Standard Co., Inc., 440 Peoples National Bank Bldg., Grand Rapids, Mich., to withstand abuse of press room operations. The "Pressveyor" is compact and constructed of heavy gage formed steel and steel tubing. Wide base provides stability. Two-wheeled design allows it to be easily moved. Two models are available — 6' which is adjustable up to 39° max. operating pitch and 8' adjustable up to 44° max. operating pitch.



GEAR-TYPE HYDRAULIC PUMP

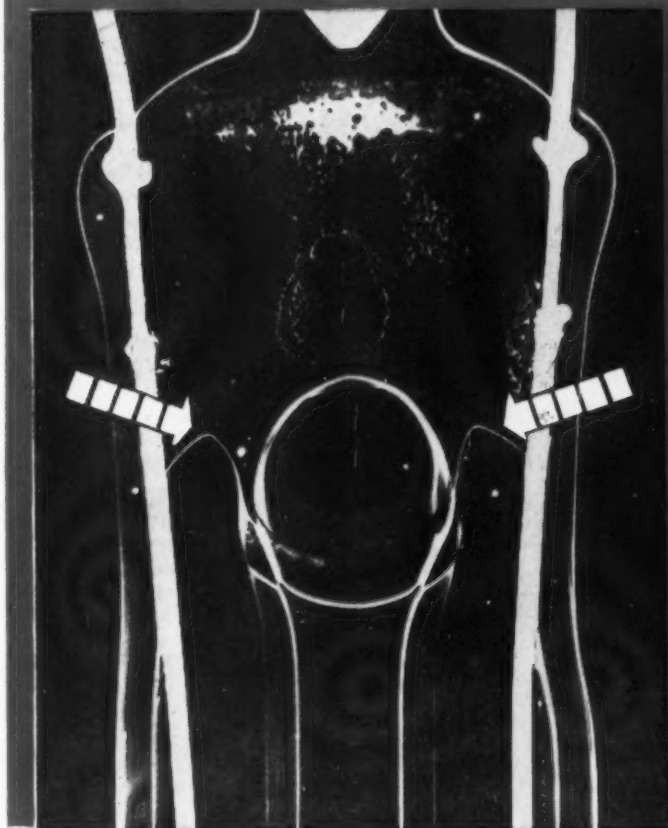
NEW gear-type hydraulic pump, Model H657-A, which delivers pressure up to 2000 p.s.i. with 5 1/2 G.P.M. at 2800 r.p.m., is announced by Aro Equipment Corp., Bryan, Ohio.



Volumetric efficiency using S.A.E. #10 oil is said to be above 90%; overall efficiency above 500 p.s.i., 85% or better. It is recommended for hydraulic systems ranging from 100 to 2000 p.s.i. such as farm tractor equipment actuation and control, hydraulic presses, machine tool feed controls, hydraulic jacks, bulldozer blade control, etc. The unit is approximately a 3 1/2" cube, with 1/2" dia. x 11/16" drive shaft extension, plus threaded portion for 3.8" nut.


(Continued on page 162)

Two good ways to pick Fluorescent Lamps



I You might start by becoming an expert on skiagraphy—"shadow-photo" technique of photographing transparent objects. General Electric uses skiagraphs like the one above to check on the structure of the glass stem of G-E fluorescent lamps. This one shows whether the lamp is properly sealed. And that's important. If those little contour lines, marked by arrows, weren't exactly the right shape, the lamp would be weakened and its life shortened. But skiagraphy is only one way to check fluorescent lamps. You'd have to master hundreds of other inspection methods too, and invest millions of dollars in equipment to make the tests. But General Electric has done all that for you. All you have to do is...

2

Insist on the  Monogram whenever you buy fluorescent lamps for office, home or store. G-E's 480 tests and inspections make dead certain that G-E fluorescent lamps will give you the most for your money... in light output and lamp life. *And G-E lamp research is constantly at work to make G-E Lamps ever better, and to make them Stay Brighter Longer.

G-E LAMPS

GENERAL  ELECTRIC

GRIND

and POLISH

BETTER—FASTER ... with BELTS

... and more important these days—do it for less—much less!

Conversion from shop-coated "set-up" wheels to factory-coated abrasive belts through the adoption of resilient work wheels and idler backstands, is based on the soundest engineering and cost recommendations.

First, the uniform, factory-coated belt is sharper, faster, and smoother cutting. Second, the resilient contact wheel provides a cushioned face which requires less operator effort and skill. Third, the belt cutting area is four times greater which means cooler cutting and longer life.

You can now check these benefits on your own work without cost or delay, just ask your distributor to arrange for a demonstration on one of our new portable demonstrating units.

Write for **NEW Backstand Booklet**



BEHR-MANNING . TROY, N.Y.

(DIVISION OF NORTON COMPANY)

Quality Coated Abrasives Since 1872

INTER-COMMUNICATION SYSTEM



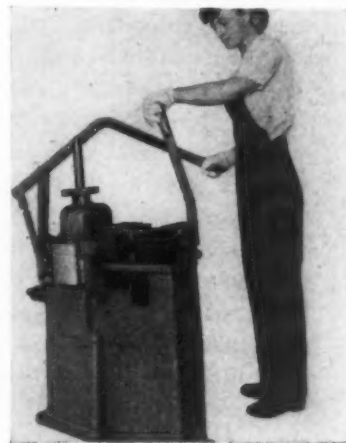
NEW post-war line of Flexifone inter-communication equipment, made by Operadic Mfg. Co., St. Charles, Ill., includes a 10-station master, 20-station master, 6-station "Supervisor" master and remote speaker station with or without callswitch. Distinctively styled, the new line features "finger tip" touch talk switch, modern die-cast metal housings with Hammerloid finish, gravity-assisted piano-type keyboard for station selector switches, and plastic selector keys and controls. Literature available.

NON-ROTATING HYDRAULIC CYLINDERS

NEW line of non-rotating hydraulic cylinders is announced by Anker-Holth Mfg. Co., Port Huron, Mich.

Line includes 11 sizes and 7 standard mountings. Features include: absence of tie rods; cushioned cylinders at no increase in overall length; two-way action; one-piece, step-seal piston rings; for oil or water service. Safety factor is 6-1. Literature available. Cylinders are designed for low pressures up to 750 psi and high pressures from 750 psi to 2000 psi, in sizes from 1½" to 8" bore, in various mountings.

ON-THE-SPOT-DIE CASTING



HIGH speed production die casting machine for on-the-spot die casting is announced by the DCMT Sales Corp., 401 Broadway, New York, N. Y. Runs as small as 250 parts are said to be economical, and production speeds of 600 shots an hour may be reached.

(Continued on page 164)

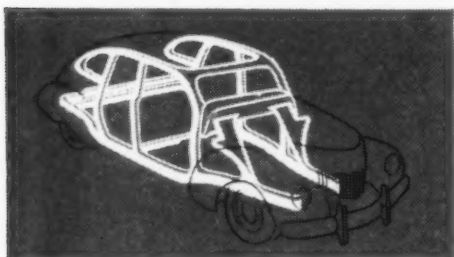
"STEEL is still King!"



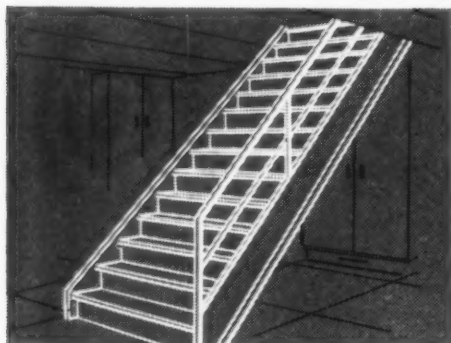
Quoted from MATERIALS & METHODS

We can help you CASH IN on Steel's advantages

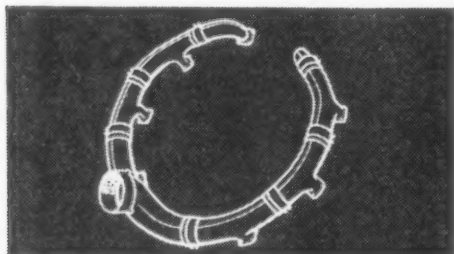
Perhaps you are not making the most of Steel's advantages in the design and manufacture of your products. As the world's largest maker of Steel, we can offer you complete counsel as to how this versatile material can work for you. The right steel in the right application saves money . . . and makes money by improving product acceptance. Write us for free metallurgical help.



STIFFER FRAMES for the new model cars are made possible through steel's ability to be cut, formed and welded into a one-piece bridge-like structure. Steel's superior fabricability gives the designer a free hand to create a better product at no increase in cost.



PREFABRICATED stairways, closets and other architectural units offer endless opportunities to capitalize on steel's sales appeal. Many fabricators use U-S-S PaintBond Galvanized Sheets for such products because they can be painted so successfully.



10,000 HOURS of high-temperature service on an American Airlines flagship is the record of this U-S-S Stainless Steel exhaust manifold. Wherever such extreme resistance to heat and corrosion is a must, you can't beat Stainless!

FOR each application there is usually one best material. It is no mere coincidence that today Steel is the odds-on favorite in virtually every field of manufacture. There are crystal-clear reasons why this is true. . . .

1 ECONOMY

Low cost has always been a fixed characteristic of Steel, not only in the price of the basic material but in the expenditure required to make it into a finished product.

2 VERSATILITY

Only Steel can be produced in such an extreme variety of alloys, forms and finishes. Its characteristics can be tailor-made to fit exactly the demands of the end use . . . high strength-weight ratio, resistance to abrasion, heat, corrosion and fatigue.

3 FABRICABILITY

No other material can be so readily cut, formed, welded, riveted, soldered, machined, stamped and finished.

4 AVAILABILITY

The persistent and far-thinking expansion of Steel's production and distribution facilities make it today's most abundant manufacturing material.

Only STEEL can do
so many jobs so well



CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh and Chicago

Columbia Steel Company, San Francisco, Pacific Coast Distributors
Tennessee Coal, Iron & Railroad Company, Birmingham, Southern Distributors
United States Steel Supply Company, Chicago, Warehouse Distributors
United States Steel Export Company, New York

UNITED STATES STEEL

SAVE \$s

by saving seconds...with more efficient hand tools

These are the days when seconds of time saved help vitally to combat rising costs.

Are there hand operations in your plant? If so, these BERNARD hand tools may be worth their weight in gold to you.

\$\$\$

Plier that is Wrench and Cutter, as well



New, streamlined, long-nose, BERNARD Parallel Action PLIERS (#402-6"). Jaws close parallel like a vise. Cutters on outside of head for easy, quick use. Compound leverage action doubles gripping power.

\$\$\$

Cutting Nippers that Reduce Hand Fatigue



BERNARD Diagonal Cutting Nippers (#177-5½") have lively spring action and compound leverage to keep hand fatigue at a minimum in repetitive operations.

\$\$\$

Light Metal Snips that Cut Curves in Both Directions



BERNARD Metal Snips (#888-10¼") have spring action and compound leverage. Blades are so bevelled as to permit easy cutting of curves in either direction.

\$\$\$

Order these or other BERNARD hand tools from your Mill Supply distributor. We are making every effort to serve customers with a minimum of delay.

For complete information on the BERNARD line of pliers, nippers, cutters, punches—as well as special hand tools for specialized operations—send for catalogue. Please use coupon.

BERNARD

Wm. Schollhorn Co., New Haven 9, Conn.
"Quality Tools Since 1870"

Wm. Schollhorn Co.
6007 Chapel St., New Haven 9, Conn.
Sirs: Please send me your free catalogue of hand tools for industrial use.

NAME _____

STREET _____

CITY _____

STATE _____

Our Mill Supply dealer is _____

INSECT CONTROL DEVICE

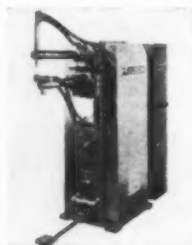


THIS is insect eradicator known as the Difusolier, announced by the Tanglefoot Co., Grand Rapids, Mich. It operates from light socket and expels exceedingly fine mist of insecticide. Insecticide known as Difuso, asserted to be harmless to humans, foodstuffs, fabrics, etc. is used in the difuser.

NEW TYPE ABRASIVE DISC

NEW type of abrasive disc, Pekay Flex-Disc, consisting of rubber-banded cutting layer, cloth layer and fiber disc, for metal-finishing for portable sanding units, is said to effect greater economy, increased production and reduction in operational hazards, according to New York Grinding Wheel Corp., 623 Bergen St., Brooklyn, N. Y. Features claimed include greater tensile strength, wider range of abrasives, augmented durability and reduction in number of operations. Durability is said to be 10-15 times that of conventional type. Available in diameters to 18", any desired bore. Standard thickness is 5/32".

FOOT OPERATED SPOT WELDER



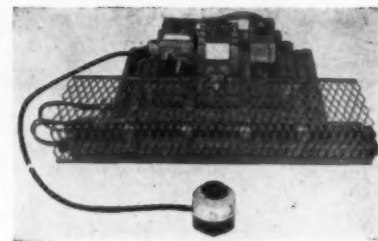
ROCKER arm foot-operated spot welder is announced by the Precision Welder & Machine Co., Cincinnati, Ohio. Mechanical arrangement combines high foot pressure with minimum operator fatigue. Among the features are high welding pressures up to 400 pounds on the electrodes with 50 pounds exerted by the operator; minimum foot treadle movement of 2½" giving 1¼" electrode movement, adjustable for best operating conditions; minimum maintenance.

PAINT PREPARER AND BINDER

for removing wax and grease, is announced by Gillespie Varnish Co., Dey & Howell Sts., Jersey City 6, N. J. Added to new paint, Hold Tite is said to make new paint bind more tenaciously. Wiping old surface with Hold Tite-dampened cloth cleans and deadens surface gloss. Commercial sizes available. Surface developed is similar to sand paper surfaces, according to maker.

BULL Dog Hold Tite, a clear liquid to prepare paint, enamel and varnish glossy surfaces for covering coats and

HEAT SEALER

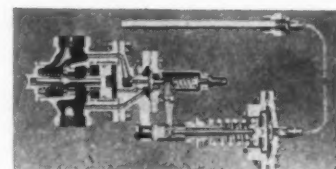


NEW solenoid-operated Pack-Rite "30-inch Giant-Jaw" heat sealer, claimed to heat seal large bags, pouches, sheets, etc., announced by Pack-Rite Machines Div. of Techtman Industries, 714 W. Wisconsin Ave., Milwaukee 1, Wisc. Unit is equipped with 30" hard chrome-plated sealing bars with either horizontal-krimped or flat seal bars. Forward-backward adjustment is included. Dial thermostat controls temperature providing a heat range from room temperature to 550 degrees, to seal wide range of materials.

NEW LOW VOLTAGE CONTROL

LOW voltage (24V) control which permits conversion of standard machine tools and fixtures to automatic or semi-automatic production units by pneumatic control of machine or fixing movement is announced by Electro-Air Devices Co., 2811 W. Fletcher St., Chicago, Ill. Used with any standard air cylinder, control can be furnished to provide single or multiple cycle control with addition of cycle timing, hesitation limit switches, etc., for automatic drilling, tapping, milling, indexing, holding etc. It is said to make for faster and easier production. Printed matter available.

STEAM TEMPERATURE REGULATOR



SELF-contained, spring loaded, internal pilot, piston operated temperature regulator for steam service has been announced by Leslie Co., 121 Delafield Ave., Lyndhurst, N. J. New regulator features Duo-Matic Control, whereby both accurate temperature regulation and pressure control are obtained simultaneously with a single regulator, thus simplifying piping and reducing installation costs. Features include a wide-range, rugged thermostatic element with 100°F adjustable temperature range. It is single-seated for positive dead-end control, and is equipped with metal diaphragms. Vital parts are hardened to 500 Brinell. All wearing parts renewable.

(Continued on page 166)

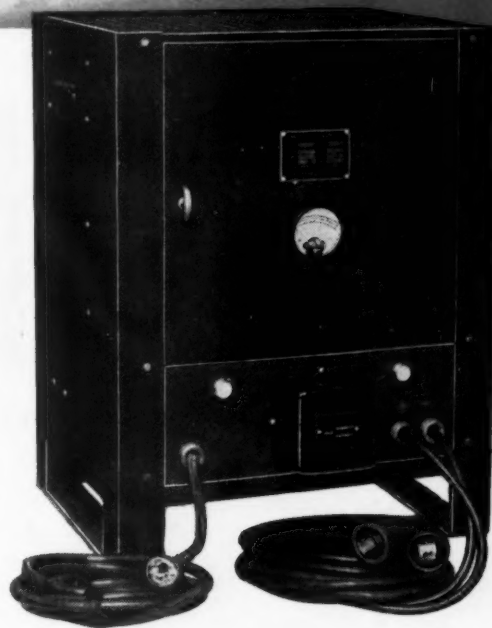


...with Federal's Automatic INDUSTRIAL TRUCK BATTERY CHARGER!

YOU SAVE TIME AND MONEY with the FTR9202-AS battery charger. It operates with complete simplicity . . . keeping your plant trucks "full powered" and always ready to deliver the goods when and where they're needed.

Automatically operated, this Federal engineered equipment provides *sure, rapid, unattended* charging. It plugs into any 105-120 volt, single phase, 60 cycle supply. Charging first at a high rate, a temperature compensating relay then reduces the finishing charge to a safe, low rate.

You'll find the FTR9202-AS Charger (only 25 inches high) suitable for floor, wall or bench installation. Built with Federal Selenium rectifiers, it is both rugged and efficient . . . giving long years of dependable operation, and assuring maximum service from your trucking equipment. Write for complete description and details.



Federal Telephone and Radio Corporation

Export Distributor:
International Standard Electric Corporation

Newark 1, New Jersey



Engineering Thought THAT MEANS **BOWSER** BETTER SERVICE... *Longer*

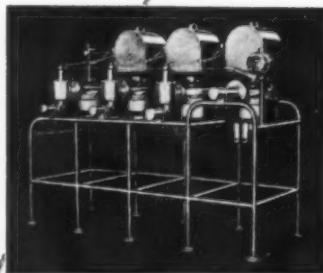
for

METERING - - FILTERING - - PUMPING
PROPORTIONING - - DISTILLING - - FUELING
STORING AND DISPENSING

Every product built by Bowser is designed to improve some industrial process. To customers this means better products at lower costs.

PROPORTIONING SYSTEMS

Accurately blends two or more liquids. Patented, precision volumetric control. Assures uniform product . . . eliminates batch mixing. Saves time, labor and storage space.



EXPENDABLE CARTRIDGE FILTER

New Bowser development for economical filtration of liquids. Protects costly equipment from dirt or foreign matter. Easily replaceable elements remove particles as small as 2 microns.

Sales and Service in all principal cities

Write **BOWSER Inc.**

1334 Creighton Avenue

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LIQUID CONTROL SPECIALISTS SINCE 1885



Meters



Filters



Pumps

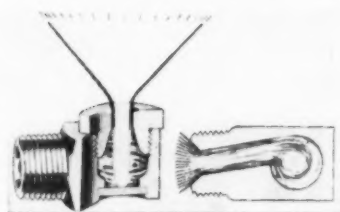


Packaging Units



Pipe Sealing Compound

IMPROVED SPRAY NOZZLE



DESIGN change which is said to increase life of vortex type spray nozzles up to 100 times is incorporated in improved "Whirljet" Spray Nozzles made by Spraying Systems Co., 4075 W. Lake St., Chicago 24, Ill. A tungsten carbide insert in base of vortex chamber is said to effectively reduce wear caused by the action of abrasive particles that may be mixed in the liquid to be sprayed. Reference catalog 22 available.

CONVEYOR-WORK TABLE

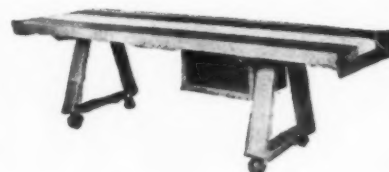


ILLUSTRATION shows all-purpose conveyor-work table for assembly, inspection and packaging operations, announced by Island Equipment Corp., 101 Park Ave., New York, N. Y. It is known as the Unitable and can be assembled in as many units as desired. It can be lengthened, shortened or moved with ease. Side leaves can be added or removed from either side. Small power tools can be mounted on the frame or side leaves.

COUPLING FOR FLEXIBLE TUBING



COUPLING claimed to make possible a 10 second joining and disconnecting of individual sections of flexible tubing has been developed for Spiratube, the non-collapsible, retractable tubing made by Warner Bros. Co., Spiratube Div., Bridgeport 1, Conn. The coupling, a flat spring steel collar, is built into tubing. It may be compressed to slip inside end of another section and released to form a strong, tight joint. Sections are disconnected by compressing inner spring steel collar and withdrawing male end. Couplings are covered with long-fibre, fire-resistant duck fabric, coated with a durable thermoplastic. Spiratube sizes available are from 3-16" in diameters and lengths of 10, 15 and 25 feet.

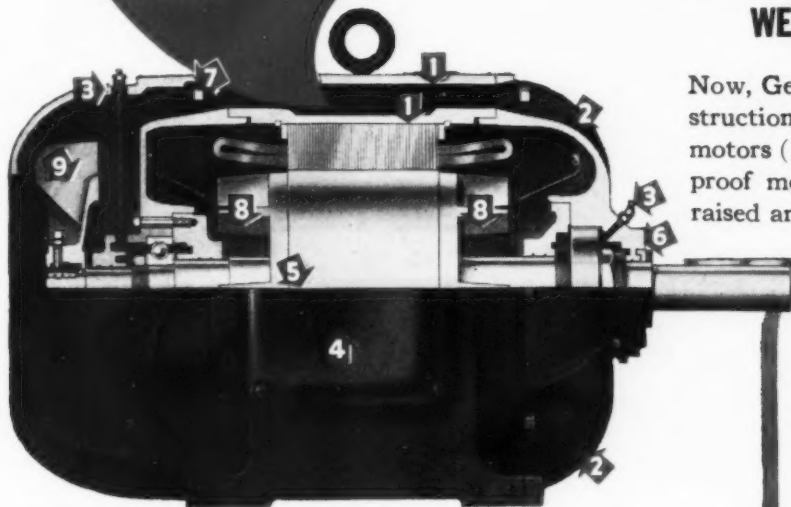
(Continued on page 168)

A DOUBLE WALL

Keeps trouble out

**NEW TRI/CLAD TOTALLY ENCLOSED MOTOR
IS MORE FULLY PROTECTED FROM DUST, DIRT,
WEATHER, OR WHAT-HAVE-YOU . . .**

Now, General Electric has applied Tri-Clad construction to its line of totally enclosed induction motors (1 to 1000 hp) and to most of its explosion-proof motors as well. *Extra protection* has been raised another notch.



FOR EXTRA-SEVERE JOBS

Applications amid dust, metal filings, coolants, or corrosive agents, where totally enclosed motors have always been required, will now have the benefit of a stronger armor, plus convenience features that simplify installation and servicing.

FOR EXTRA-WET LOCATIONS

Indoors or out, these Tri-Clad totally enclosed motors will take hoseings or heavy rains without danger of shut-down. The cast-iron frame is strongly resistant to rust and corrosion.

FOR EXTRA LONG LIFE

Many motor users are making the totally enclosed motor their standard for *all* jobs—based on evidence of long-term savings. This new member of the Tri-Clad line makes this decision more logical than ever.

HAZARDOUS ATMOSPHERES

"Companion motors" to the standard Tri-Clad totally enclosed, the new explosion-proof and dust-explosion-proof types are tested and listed by Underwriters' Laboratories for Class I Groups C and D, and Class II Group E, F, and G.

THESE 9 POINTS

of new strength and serviceability put this Tri-Clad totally enclosed motor way ahead

1. A cast-iron, double-wall frame that completely encloses windings and punchings
2. Ribbed cast-iron end shields, machined to provide a tight seal, yet easily removed
3. Well proved pressure-relief greasing systems which can be packed with a long-life lubricant where advisable
4. Cast-iron conduit box diagonally split for wiring convenience (independently explosion-proof on explosion-proof motors)
5. Leads are sealed in a nonshrinking compound at the point where they emerge from frame
6. Rotating, labyrinth seal prevents infiltration of grit or liquids
7. Large, free-flowing, easy-to-clean air passages protect parts from accumulation of dust and foreign matter
8. Modern "ageless" insulation treatment includes Formex[®] magnet wire
9. Powerful external fan is removable, simplifying maintenance. (Nonsparking type for explosion-proof motors.)

AND IN ADDITION
—compactness and short length promote ease of handling and installation.

*Trade-mark Reg. U.S. Pat. Off.



GENERAL ELECTRIC

760-257C-8058

FOR THE COMPLETE STORY

GENERAL ELECTRIC COMPANY
Apparatus Dept., Schenectady 5, N. Y.

Please send me GEA-4400, which describes the new Tri-Clad totally enclosed motor.

Please send me GEA-4131, "Motors and Control for Hazardous Locations."

Name

Company

Address

3893

MAKE your own



with the Roovers Type
Embossing Presses and
Hand Label Embossers

ADAPTED TO ALL INDUSTRIES



Above — Power Press
— provides combination
of 1/4 and 3/8"
letters.

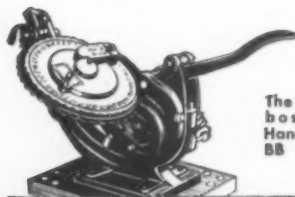
power-operated. Easy to operate.
Economical to buy . . . and to use.

Write now for descriptive literature
and price list.

Where few tags are
sufficient, ROOV-
ERS Hand Label
Embossers is ideal
and low in cost.
Circular on request.

SPECIALISTS IN
METAL TAPES
JOSEPH M. LOTSCH,
Pres.

3603 - 14th Ave., Brooklyn,
N. Y.



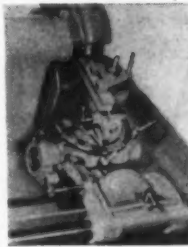
The Hand Label Em-
bossers (above),
Hand-operated Model
BB (left).

ROOVERS

CARBIDE TOOL GRINDER

NEW carbide tool grinder, for grinding carbide tools for lathes, automatic screw machines, milling cutters, offset tools, spiral reamers, counterbores, etc., is announced by E. F. Hager & Son, 98-02 217th Lane,

Queens Village 9, N. Y. Grinder is said to eliminate guesswork on angles and free-hand operation. It has built-in reciprocating action unit, consisting of tool-holder-protractor arrangement, that pivots on a fixed center and cannot float. This constant control is claimed to assure exact angles ground to a lapped finish. Grinds tools to and including 1 1/2" square. Literature available.



LIGHT WEIGHT NEOPRENE COVERALL

acids and alkalis, is announced by Benson & Associates, 310 S. Michigan Ave., Chicago. The coverall, which weighs less than 3 lbs. and has zipper closings at front, wrists and ankles, is said to protect wearer from neck to shoe-tops. Hood snaps on at back of collar for head protection.

NEW buff-colored neoprene coated coverall, said to be impervious to oils and greases and highly resistant to

SELF-LOCKING U-BOLT NUT

NEW self-locking nut, designed especially for truck, bus and car leaf spring U-bolts, is announced by Elastic Stop Nut Corp. of America, Union, N. J. Nuts are of high strength steel with sufficient thread length to produce bolt loadings up to 70,000 lbs. per sq. in. Position setting is said to be undisturbed by vibration, impact or stress reversal. Nuts are claimed to protect permanently against vibration, corrosion, thread damage, liquid seepage. Eight sizes are available ranging from 3/8"-24 to 1"-14.



CARBON FILAMENT INFRA-RED LAMPS

mechanical joint between the base and bulb which is claimed to provide a permanent seal, to eliminate need for binders, and to assure maximum lamp life even under terrific heat of infra-red tunnel installations. Mechanical base is available on clear-type lamps of 128, 250, 375 and 500 watts; on inside silvered R-40 lamps of 128, 250 and 375 watts.

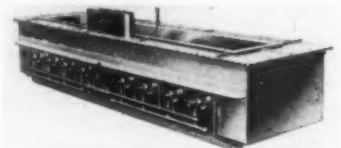
CARBON filament lamps, made by North American Electric Lamp Co., St. Louis 6, Mo., now feature a

VIBRATING ROD BOTTLE OILER

Rite Corp., 3438 So. 13th St., Milwaukee 7, Wisc. It can be refilled without removal from installation and is of unbreakable brass and Lucite construction with standard capacities of from 1/2 to 32 ounces. Recommended uses are for plain sleeve bearings, line shaft bearings, jack shafts and spindles where light or medium bodied oils are satisfactory. It is claimed to prevent dust, dirt and chips from getting into oil holes.

NEW automatic Vibrating Rod Bottle Oiler, claimed to be economical in operation, is announced by Oil-

FIRE TUBE BATH POT



LOW temperature Fire Tube Bath Pot furnace, said to meet requirements for an efficient unit capable of holding very narrow temperature control band, is announced by Don C. Campion Laboratories, 9086 Alpine Ave., Detroit 4, Mich. Unit is recommended for oil or salt-draw furnaces, stereotype and linotype work, tinning, babbiting, lead dipping and other operations up to 1200°F. Installation consists of merely connecting to a gas line. Available in most any size and shape.

DUAL PURPOSE PRIMER SEALER

PLASTER Grip, a dual purpose liquid for priming and sealing plaster walls, is announced by Gillespie Varnish Co., Dey & Howell St., Jersey City 6, N. J. It can be applied when walls are wet and, high alkali resistance is said to eliminate "lime burns". Other features claimed include high solid content, no flashing, single coat seals "damp spots", no objectionable odor, quick drying, can be used over old paint. A gallon covers 800-1000 sq. ft. of new plaster. Available in all commercial sizes.

PIPE TAP EXTRACTORS



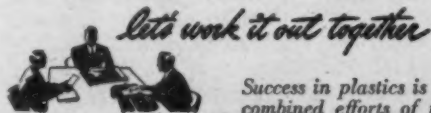
TEN new pipe tap extractors in stock sizes, for accurate, quick and easy removal of broken pipe-threading-taps, have been added to its line by the Walton Co., 94 Allyn St., Hartford 3, Conn. They are available for pipe taps from 1/8" to 1" for both regular and interrupted thread styles.

(Continued on page 170)



International plastic in the call for combs!

From border to border—and beyond—manufacturers in growing numbers are making full use of the special advantages of Styron in the production of quality combs. The millions of users of Styron combs—in the United States, Canada and Mexico—know only, perhaps, that they obtained a useful, attractive product at a price they could afford to pay. But the makers of these combs know that customer satisfaction (and their own success!) stems from the inherent excellence of this Dow plastic as a molding material. They know Styron offers good dimensional stability, smooth surfaces, resistance to acids and alkalis. They know Styron can be made beautifully clear, translucent or opaque and that it has unlimited color possibilities. They know Styron's light weight means more pieces per pound and that, combined with low price, this gives maximum manufacturing economy. They know that, in combs and many other products, Styron is the name you can *depend* on in plastics!



Success in plastics is best measured in end products. It calls for combined efforts of manufacturers, designers, fabricators, raw material producers. Dow is ready to do its part. Save time and money—call on Dow and get the most out of plastics.

PRESENT AND POTENTIAL USES—Lighting fixtures and displays; insulators; hydrometers; battery cases; funnels; bottles; closures; food handling equipment; pharmaceutical, cosmetic, and jewelry containers; jewelry; advertising items; refrigerator parts; pens, pencils; chemical apparatus; lenses; decorative objects and trim.

PROPERTIES AND ADVANTAGES—Beautiful, clear, translucent; "pipes" light through rod around corners, etc.; resistant to acids and many alkalis; stable at low temperatures; excellent electrical properties; broad color range; low specific gravity, providing more moldings per pound; low water absorption.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN • New York, Boston, Philadelphia, Washington, Cleveland, Detroit, Chicago, St. Louis, Houston, San Francisco, Los Angeles, Seattle

DOW
PLASTICS

ETHOCEL • ETHOCEL SHEETING
STYRON • SARAN • SARAN FILM

A TIME-HONORED VETERAN OF THE PRECISION WORKER'S CRAFT

Photo courtesy
Allis-Chalmers Mfg. Co.



41 years of continuous service with Allis-Chalmers Manufacturing Co. are convincing testimony to the value of Olaf Olson as a precision worker and master of his craft. 66 years of service to

the manufacturers and skilled workers of America have made Starrett Tools the outstanding choice of buyers and users wherever precision measuring tools are used.

THE L. S. STARRETT CO. • ATHOL • MASSACHUSETTS • U. S. A.

World's Greatest Toolmakers

STARRETT

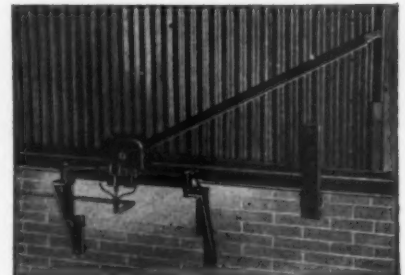
PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • HACKSAWS
METAL AND WOOD CUTTING BAND SAWS • GROUND FLAT STOCK

SMALL DIAL BORE GAGE



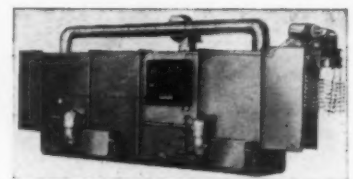
NEW internal indicating gage, the #0 Dial Bore Gage, is announced by Standard Gage Co., Inc., Poughkeepsie, N. Y. This extends size range for this type instrument down to $\frac{3}{8}$ ". New gage is furnished with an indicator graduated in either .0001" or .002 mm. Accuracy within .00002" is claimed. Diamond points are recommended when gage is to be used on long run inspection.

SLIDING DOOR OPERATORS



LINE of pneumatic operators for single sliding doors, level or inclined track, is announced by National Pneumatic Co., 420 Lexington Ave., New York 17, N.Y. Operators are supplied in packaged kits of standardized units (including door operator, wall brackets, operating arm and door slide) and are said to be adaptable for newly installed doors or those already in service. Kit No. DC-41020 applies to door openings of 2½'-5' wide; No. DC-41030 5½'-8' wide. Kits for wider openings available. Literature on request.

METAL WASHING MACHINE



NEW continuous type washing machine for handling large numbers of metal parts on racks, before plating, painting or any similar process, is announced by Optimus Equipment Co., 223 Church St., Matawan, N. J. It is said to handle any free draining parts, provided sprays have free access to parts. Output is claimed to be 60 racks per hour. Machine can be used as a single stage washer, or it can handle a number of successive operations, alkaline, acid or neutral. Its greatest use is for cleaning of buffing compositions before plating.

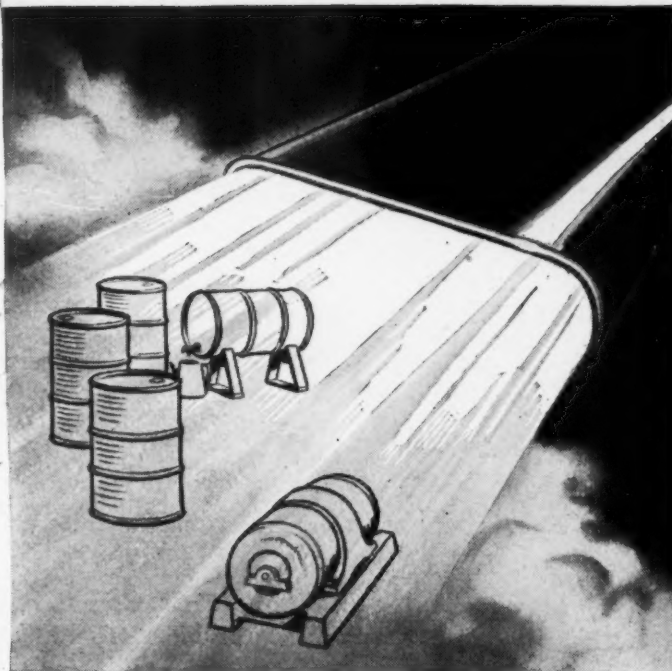
(Continued on page 174)



**PULL THE
TRIGGER...**

KILL THE FIRE

- **In Flammable Liquids**
- **In Electrical Equipment**



*All Kidde Hand Portable Extinguishers work the same simple, natural way:
Aim the nozzle. Pull the trigger. Kill the fire.*

IT'S JUST AS EASY AS THAT!

Kidde Portables are safe to use, sure in action against incipient fires in flammable liquids or electrical equipment. With carbon dioxide capacities from 2 to 20 pounds, they pack the punch that knocks out small lab blazes or relatively severe industrial fires.

The dry inert carbon dioxide discharged by Kidde Portables cannot damage equipment, nor contaminate liquids. No after-fire mess or moisture.

Your *larger* hazards may call for Kidde Wheeled Units or Systems. But at the smaller danger spots—keep a Kidde Portable within easy reach!

Ask a Kidde representative for details. Better still, place your order *now*.

Walter Kidde & Company, Inc. • 750 Main Street, Belleville 9, New Jersey



The word "Kidde" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc.

Kidde—

“Bumblebee”

...Improved Weld Quality

7 reasons why your best bet for AC welding is a “Bumblebee”

Wilson “Bumblebee” A. C. arc welders provide quality welding faster, better, and at lower maintenance and operating costs. This is made possible by the incorporation of advanced principles of design in every “Bumblebee” welder — either regular or all-weather model:

- 1 *Precise, stepless current control* to any value within the NEMA range, simply by turning a crank on top.
- 2 *Efficient ventilation* provides safe, dependable operation even when operating at maximum current.
- 3 *Built-in capacitors* relieve over-loaded power lines and reduce power factor penalty charges.
- 4 *Coils protected against fire and vermin* by mica and glass fabric insulation.
- 5 *Interchangeable primary terminals* permit easy, rapid change from low to high line voltage and vice-versa.
- 6 *Output or secondary terminals* readily accessible by removing 4 screws which hold small insulating panel.
- 7 *High visibility of current indicator* is assured by large, easily read calibrated scale outside case.

PR

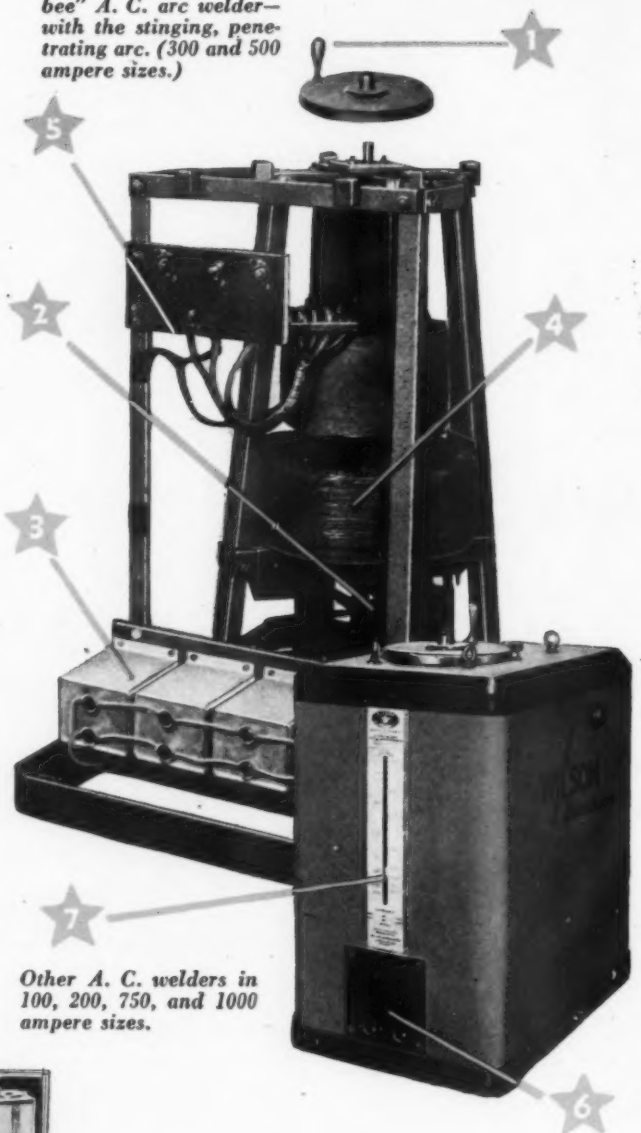
AIR REDUCTION
60 East 42nd Street
New York 17, N. Y.

Send me copy of your
catalog ADW-53.

FIRM _____
SIGNED BY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____



The Wilson “Bumblebee” A. C. arc welder—with the stinging, penetrating arc. (300 and 500 ampere sizes.)



Other A. C. welders in 100, 200, 750, and 1000 ampere sizes.

Now Available—a new illustrated catalog packed with full details concerning the complete line of Wilson “Bumblebees.” Mail the coupon today for your copy—or get in touch with your nearest Airco office.

ADVANCED DESIGN FOR

...Reduced Power Consumption

advanced design provides
these operating features

In addition to the outstanding constructional features described and illustrated on the opposite page, the advanced design of the new Wilson "Bumblebee" offers other desirable qualities important to efficient economical welding performance:

1. **WIDE CURRENT RANGE:** from 30 to 275 amperes for the 200 ampere model; 60 to 375 amperes for the 300 ampere machine; and 100 to 625 amperes for the 500 ampere type.
2. **IMPROVED ELECTRICAL EFFICIENCY** at rated load of 84½%, 81% and 83%, respectively for the 200, 300, and 500 ampere sizes is provided.
3. **LOW OPEN CIRCUIT VOLTAGE** (75 volt) works to greater advantage on new AC electrodes and gives perfect ease of welding.
4. **VASTLY IMPROVED POWER FACTOR** virtually eliminates the penalty charge of low power factor at which transformers of earlier designs operated, and permits the use of smaller primary cables, line switches and fuses with a resultant saving on installation costs. This feature also permits the operation of more welders from existing feeders without causing overload, as compared with transformer welders of earlier designs or those without power factor correction.
5. **QUIET OPERATION** because there are no rotating parts in the circuit design. The Wilson "Bumblebee" is almost silent in operation.
6. **MINIMUM MAINTENANCE** because its operation involves no moving parts with the exception of the fan.



For more information about the complete line of "Bumblebee" A. C. welders, fill in the coupon on the left. Send it to: Air Reduction, General Offices, 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, General Offices, Houston 1, Texas. Represented Internationally by Airco Export Corporation.

SPECIFICATIONS

200 Ampere "Bumblebee"
(Shown on Left)

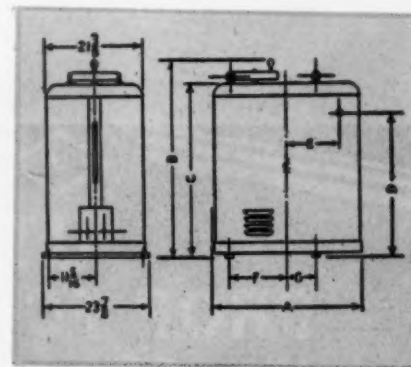
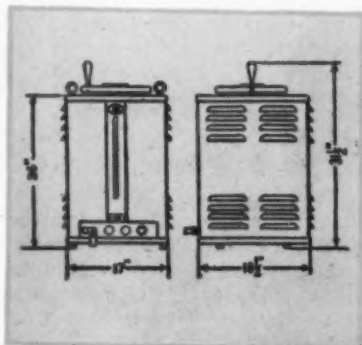
Approximate over-all dimensions on running gear
height 37½", width 18½", length 18½"

300 & 500 Amp. Stand. & All-Weather "Bumblebees"
(Shown on Right)

| | A | B | C | D | E | F | G |
|--------|-----|-----|-----|-----|-----|------|-----|
| 300 A. | 33" | 42" | 37" | 31" | 4" | 12½" | 6" |
| 500 A. | 36" | 45" | 40" | 34" | 5¼" | 14" | 7½" |

Approx. dimensions on running gear

| | height | width | length |
|----------|--------|-------|--------|
| 300 Amp. | 52" | 27" | 46" |
| 500 Amp. | 55" | 27" | 46" |



AIR REDUCTION

Offices in All Principal Cities

Headquarters for Oxygen, Acetylene and other Gases... Carbide... Gas Welding and Cutting Apparatus and Supplies... Arc Welders, Electrodes, Accessories

Utica Tools

FOR MORE TOOL MILEAGE



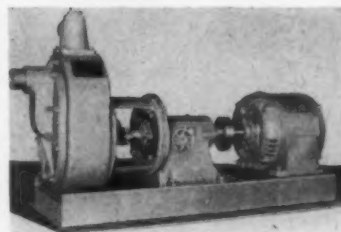
Pliers for
Every Need

UTICA has developed a new process of electronic hardening of the cutting edges which gives more strength, and insures still more tool mileage. UTICA Pliers and Adjustable Wrenches are sold through recognized jobbers.

U T I C A

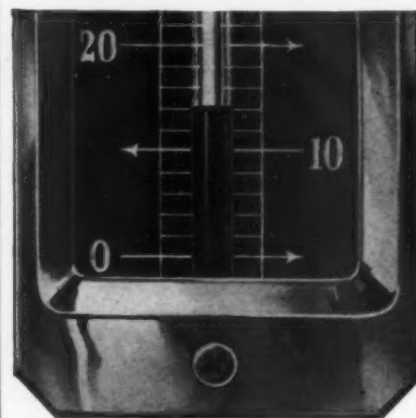
UTICA
DROP FORGE & TOOL
CORPORATION
UTICA 4, NEW YORK

SELF-PRIMING PUMPS



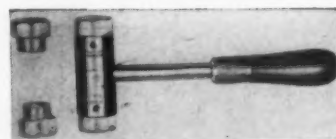
SELF-priming centrifugal pumps are announced by Marlow Pumps, Ridgewood, N. J. "Type E" industrial pumps, both electric and belt-driven, are made in sizes to handle 50 to 4000 GPM. They prime and reprime automatically without recirculation or the use of any auxiliary mechanical devices. Made with 1½ to 10-inch fittings, they operate on heads 10 to 150 ft., handling clear, gritty, warm or volatile liquids.

NEW MERCURY TUBE FOR INDUSTRIAL THERMOMETERS



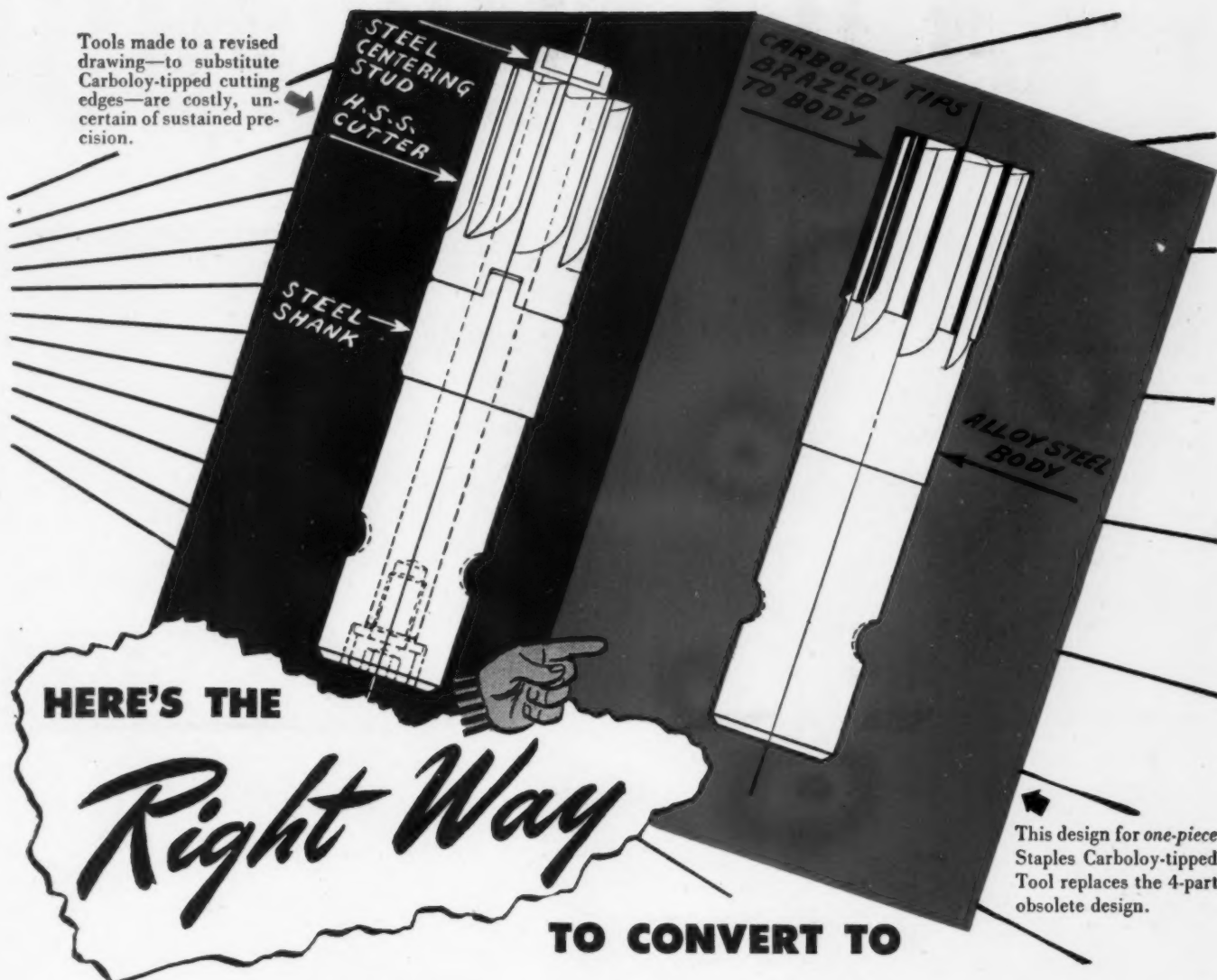
NEW type of mercury tube for industrial thermometers, claimed to increase readability, is announced by Philadelphia Thermometer Co., 4401 N. 6th St., Philadelphia, Pa. Elliptical tube has bore placed so that mercury column is magnified to full width of column. Yellow tube back, visible only above mercury column, forms sharp color contrast at point of temperature reading.

LIGHT-WEIGHT SOFT HAMMERS



NEW series of light weight soft hammers for use in experimental laboratories, shops where precision workmanship is necessary, etc., (including therapy) is announced by Gregory Tool & Mfg. Co., 5300 Tireman, Detroit 4, Mich. "Perfect Balance" hammers have aluminum shanks and heads with replaceable plastic tips and seasoned maple handles shaped to fit the hand. Available in six sizes (diameter of head), ¾", 1", 1¼", 1½" and 2", they weigh from 3½ to 26 ounces.

Tools made to a revised drawing—to substitute Carboloy-tipped cutting edges—are costly, uncertain of sustained precision.



HERE'S THE

Right Way

TO CONVERT TO

CEMENTED CARBIDE CIRCULAR CUTTING TOOLS

YOU GO FAR TOWARD OFFSETTING TODAY'S HIGHER WAGES through the increased production you get with STAPLES Carboloy cemented carbide tipped circular cutting tools. Their extra-hard edges cut deeper, cleaner to closer tolerances, faster. They require fewer resharpenings.

When you convert from high speed steel—as many another manufacturer is doing these days—convert *all the way*. High speed steel tools with Carboloy tips applied to the shanks are less efficient, and cost more than specially de-

signed or standard high precision Staples Tools.

Send us drawing of your high speed steel tool, and Staples engineers will submit drawing for complete new Staples Carboloy-tipped Tool, designed to take full advantage of cemented carbide superiorities.

Meet the challenge of increased wages with Staples Carboloy-tipped Tools. Mechanical science offers nothing finer.

THE STAPLES TOOL COMPANY

Formerly Staples Tool & Engineering Company

CINCINNATI 25

OHIO

Staples CARBOLOY-TIPPED CIRCULAR CUTTING TOOLS

REAMERS • CORE DRILLS • SPOT FACERS • COUNTERBORES • END MILLS • SHELL END MILLS • ALSO A COMPLETE LINE OF CIRCULAR SPECIAL TOOLS

MORE FOR YOUR



ROSIN-MODIFIED
MALEATE

HERCULES
CELLOLYN
102

IT PAYS TO
KNOW *MORE*
ABOUT

HERCULES

MONEY IN LACQUER RESINS



ANOTHER HERCULES
CONTRIBUTION TO
BETTER COATINGS

Here is a new, readily-available lacquer resin that is comparable in quality to hard, rosin-modified maleates—yet appreciably lower in cost. It is in plentiful supply and is suitable

for practically any lacquer formulation where rosin maleates have been previously used.

Known as Cellolyn 102, this new Hercules resin is equal to the usual rosin maleates in compatibility with nitrocellulose, color, rapid solvent release, and solubility. With ethyl cellulose, it shows an even wider range of compatibility than hard rosin maleates.

Cellolyn 102 gives an appreciable increase in low temperature flexibility, as determined by cold-check tests. It affords better sanding within the same range of cold-check resistance, and has excellent resistance to printing.

Nitrocellulose lacquers made with Cellolyn 102 are suitable for a wide range of industrial needs; for example, sealers and finishing coats for furniture, and for clear and pigmented lacquers where exterior durability is not important.

Return coupon for complete details on Cellolyn 102 and a trial sample.

*Reg. U. S. Pat. Off. by Hercules Powder Company

CHEMICAL MATERIALS FOR
THE COATINGS INDUSTRY

Other Hercules chemical materials
for the coatings industry include:



Nitrocellulose...

Basis for the fastest drying finish known—speeding up reconversion for wood, metal, other production-line work.



Synthetic Resins...

Remarkable new resins such as the Pentalyns* are the secret of tougher, quicker-cooking domestic oil varnishes.



Turpentine...

Hercules steam-distilled wood turpentine—for over twenty years the preferred paint solvent-thinner.



Vinsol* Resins...

Low-cost modifiers and extenders for dark-colored paints and varnishes. Also valuable in asphalt emulsions.



Casein...

A high-quality acid casein, basis for many modern water-paints and widely used for binding and waterproofing.



Clorafin*...

Low-cost chlorinated paraffin for flame-proofing canvas, other fabrics. Also used in "hard-surface" coatings.



FOR COMPLETE DETAILS



HERCULES POWDER COMPANY

944 Market Street, Wilmington 99, Delaware

Send complete details on Cellolyn 102. Check here ☐ if trial sample is required.

Name _____

Title _____

Company _____

Street _____

City _____ Zone _____ State _____

C-62



*Your Assurance of
Maximum Performance... FOR YEARS
... Dependable... Economical and
Requiring Minimum Servicing...*

Because the purchase of a gasoline powered appliance, farm machine or piece of industrial equipment is a major investment, users, dealers and manufacturers expect years of dependable service. The gasoline engine is the heart — the power unit. If it fails, the equipment fails. Hasty purchases now, with little-known, unproved power units, bring up an element of risk.

To be sure of all that is best and most reliable, insist on Briggs & Stratton 4-cycle air-cooled engines. Every possible effort is being made to supply today's unprecedented demands... the wait won't be too long. Remember—"it's powered right when it's powered by Briggs & Stratton"—preferred power the world over.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.



Air-Cooled Power

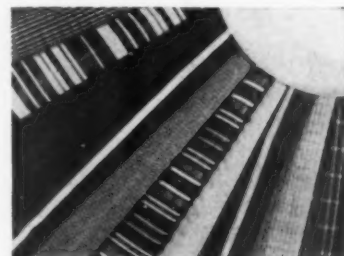
HOW TO MAKE LIQUID SOAP FROM NAPALM

The Army-developed process for making liquid soap from surplus Napalm, a gasoline thickener used in flamethrower fuel during the war, is described in a report released by the Office of the Publication Board, Department of Commerce (PB-19494; photostat, \$1.; microfilm, 50 cents; 11 pages). The soap is said to lather easily and to have no objectionable odor. Orders for the report should be addressed to the Office of the Publication Board, Department of Commerce, Washington 25, D.C., and should be accompanied by check or money order payable to the Treasurer of the United States.

1 1 1

TOUGH, WATER RESISTANT SARAN MONOFILAMENT FABRICS

The accompanying illustration shows various weaves (and indicates color combinations) of Saran fabrics used for theatre, transportation, shipboard, home, restaurant and office upholstery, as well as in the production of shoes, luggage and handbags. The monofilaments are extruded in both transparent and opaque



Saran fabrics of various weaves and color combinations

types. Saran is resistant to chemicals, acids and water, and the fabrics retain their sheen and brilliance throughout use, according to Dow Chemical Company, who advise that monofilaments are extruded by National Plastics Products Co., Odenton, Md., and Visking Corporation, Chicago. The filaments range in size from .003" to .053". They produce a strong, smooth-surfaced, rather stiff fabric.

1 1 1

PROPOSE NYLON PLASTIC SHEETS AS LEATHER SUBSTITUTE

The Du Pont Company disclosed today that it is manufacturing experimental lots of a solid nylon sheeting which, because of its toughness, is expected to provide outstanding durability in leather-like applications.

This experimental development has reached the point where it is believed it will eventually open an entirely new field for nylon. It will not be available until some production problems are solved and manufacturing facilities constructed.

Nylon is made into sheeting by being forced out through a slot on a special machine, in one continuous strip of any

(Continued on page 182)

METAL-CUTTING LUBRICATION

Tool Life Increased 50% with Improved Cutting Oil

TRANSPARENT, STAIN-PROOF OIL PRODUCES
GRATIFYING RESULTS

"We knew from certain operating conditions on a Landis automatic threading machine at a prospect's plant* that we could do a better job with Chillo No. 3 than was being done with a competitive product having approximately 14% lard and 1% sulphur compound.

"The operation being performed was threading 14 to 16 foot bar stock from all grades of materials as to hardness and all sizes from 1/2 inch to 2 inches. On 16 foot bars of 1 inch, 1 1/4 inches and 1 1/2 inches dimensions the average output was four bars of 64 feet per chaser grind with the 14% lard and 1% sulphur compound oil, and on under one inch bars the average output was 6 bars or 96 feet. The average speed or RPM while

threading was 50 to 64 on the one inch and over, while the average on the under one inch was 64 to 84, depending on the hardness of the metal.

"Although the threads were good and acceptable with the oil in use, we produced a much more uniform and smoother thread with Cities Service Chillo No. 3. We increased the tool life from four

Tool Life Increased

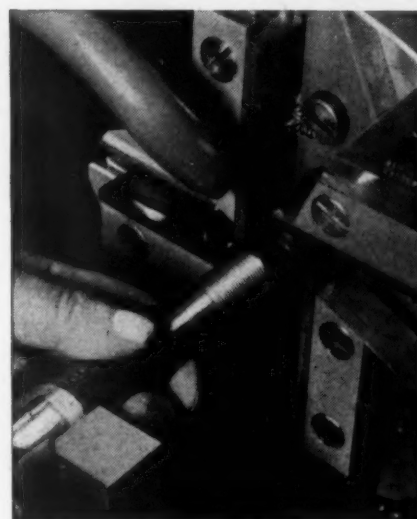
bars on the one inch and over to six and sometimes seven or an average of 100 feet per chaser grind. The under one inch production per chaser grind was increased to nine bars or approximately 140 feet.

"We stepped up production by increasing the RPM on the under one inch bars to 84, 90, or 106, depending on the hard-

Production Stepped Up

ness, and increased the larger stock bars to 64 and 84 RPM.

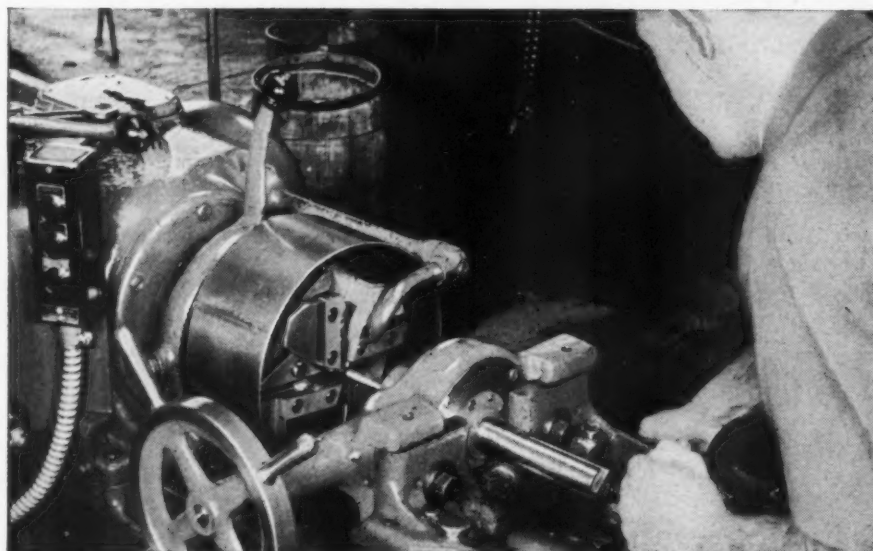
"We were requested to supply a transparent oil that would not leave stains on the finished product. With this in mind and knowing that the



plant would be very critical should some work become stained, we recommended Chillo No. 3 for the job with very gratifying results."

Cities Service makes available to any industrial organization operating in its marketing territories East of the Rockies, a highly specialized lubrication engineering service. If you're facing a metal-working problem—don't delay—call your local Cities Service office (in the South call Arkansas Fuel Oil Company), or write to Cities Service Oil Company, 60 Wall Tower, New York 5, N. Y.

*Name on request.



FOR EVERY
LUBRICATION PROBLEM
CALL **Cities Service**
FIRST!

Packed WITH INFORMATION



WANT FACTS on packings and gaskets for maintenance? Want ideas? Call your local R/M distributor. He can help you keep presses, valves, pumps and other equipment packed right.

The new 1946 R/M catalog is just off the press . . . revised, enlarged . . . full of information and photographs on the expanding R/M line.

The R/M Distributor who will bring you your copy is our representative in your area. That

means he is an expert on packing problems. Located near you, with an adequate stock to take care of your needs, he will give you prompt, efficient service.

Call your local R/M distributor for specialized, personalized packing service, fitted to your needs. Ask him for a copy of the new R/M catalog.



It's "Packed with Satisfaction" when you use R/M

RAYBESTOS-MANHATTAN, INC.

ASBESTOS TEXTILE AND PACKING DIVISION

Manheim, Pa. • Bridgeport, Conn. • North Charleston, S. C. • Passaic, N. J.

GRINNELL

PIPING
PROGRESS

Steam Header — 18" O.D. x $\frac{7}{8}$ " wall, 13' 8 $\frac{3}{8}$ " long. Carbon-Moly Turned and Bored Forging with solid, integral end-closure. One 12", three 10" and one 6" outlets.

Extruded Headers

Question: How can headers be made with smooth inside contours, minimum friction to flow and requiring only plain circumferential butt welds . . . and still comply with Code requirements?

Answer: By the extruded nozzle process which permits the making of any number of any size outlets.

Grinnell Extruded Nozzles are made by a patented hydraulic forming process. Outlets can be extruded up to and including full size. Inside contours are smooth, assuring minimum friction to flow. Welding ends are machined to same wall thickness as abutting pipe. Only circumferential butt welds are required.

WHENEVER PIPING IS INVOLVED

Typical of Grinnell's advanced pipe fabrication facilities is this forming process for outlets in headers which simplifies erection of piping on the job by eliminating difficult intersection type welds. They are made possible by this company's 95 years of piping experience and continuous laboratory research and experimentation.

Whenever piping is involved—Grinnell has the specialized knowledge, field engineering experience and the production facilities to handle the job from first plan to actual operation. From this one source you can get everything from a tiny tube fitting to a complete power or process piping installation.

GRINNELL COMPANY, INC., Executive Offices, Providence 1, R. I. Branch warehouses in principal cities. Manufacturing Plants: Providence, R. I.; Cranston, R. I.; Atlanta, Ga.; Warren, Ohio; Columbia, Pa.

GRINNELL

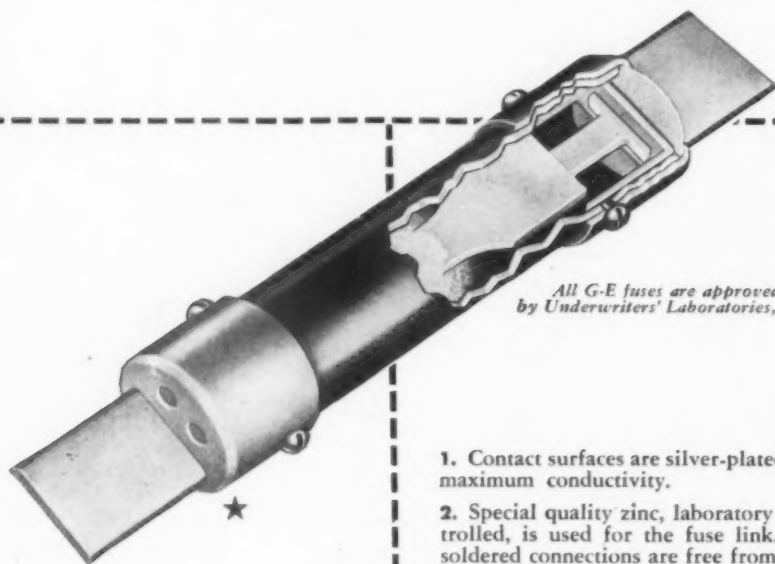


WHENEVER PIPING IS INVOLVED

8 good reasons

WHY G-E SILVEND* FUSES

provide lasting protection for electric equipment



All G-E fuses are approved by Underwriters' Laboratories, Inc.

G-E Silvend fuses are especially desirable for use in industrial plants where reduction of maintenance time is important.

The silver-plated contact surfaces of G-E Silvend fuses maintain good electrical contact as long as the fuses stay in service. There is no heating due to oxidation to cause premature blowing.

G-E Silvend fuses are particularly suited for use with apparatus having silver-plated fuse clips. They will, however, give better service than ordinary fuses where brass or copper clips are used.

For further information, get in touch with your local G-E Merchandise Distributor, or write Section D9-7-77, Appliance and Merchandise Department, General Electric Company, Bridgeport, Connecticut.

*Trade-mark Reg. U.S. Pat. Off.

1. Contact surfaces are silver-plated for maximum conductivity.
2. Special quality zinc, laboratory controlled, is used for the fuse link. All soldered connections are free from corrosive elements.
3. The filler is made under laboratory controlled conditions of temperature and humidity. It has proper texture and does not cake.
4. The casings are accurately gaged to assure tight fit. Amperage ratings are stamped on enclosure.
5. Casing is of moisture-resistant, treated fibrous material.
6. Caps for ferrule-type fuses (3-60 amp) are crimped and staked to the casing. On blade-type fuses (61-600 amp), caps are securely bolted to a steel support or yoke inside the casing.
7. This yoke prevents fuse blades from twisting, and assures proper contact alignment.
8. All G-E fuses are accurately calibrated under laboratory supervision to pre-determined characteristics. Exclusive G-E tests assure maximum standards of fuse performance.



GENERAL  ELECTRIC

(Continued from page 178)

thickness desired. It can be made in various colors, and can be run through embossing rolls to give it any grain or other finish.

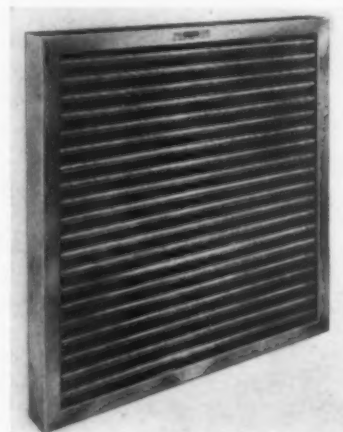
The plastic is expected to find general use for such purposes as wallets, brief cases, handbags, and other articles now customarily made of leather. It is also expected to prove of special value for seat covers and panelling on trains, buses and airplanes and for various decorative uses in the home.

Besides extreme toughness and abrasion resistance, the material has good flexibility and resistance to heat and moisture. It is resistant to attacks by insects or mold.



CARBON AIR RECOVERY PANEL EXTRACTS AIR-BORNE ODORS

Developed for use in air conditioning systems and "package" conditioners where space is at a premium, Activated Carbon Air Recovery Panels are being specified in the majority of railroad cars now being built or planned. Any desired



Sturdy light-weight metal frames house perforated tubes containing activated carbon.

proportion of the recirculated air volume may be converted to fresh ventilation air by these units whose dimensions and ease of handling are comparable to a simple dust filter.

Heretofore, power, weight and space limitations for cooling, heating and circulating apparatus have restricted the air design for the average railroad car, with an occupancy up to 80 passengers, to between 2000 and 2400 cubic feet per minute total air delivery, out of which only 25 per cent is outdoor air make-up. The remaining 75 per cent is constantly recirculated and when a car is full this air picks up and accumulates odors from smoke, food and drink—even from passengers themselves.

In the usual railroad car installation of Activated Carbon Air Recovery Panels, one-half of the recirculated air is converted to fresh air, which, when added to the outdoor air, means that each passenger receives 23 CFM of fresh ventilation air instead of 9 CFM, and odors are held below the point of human percep-

(Continued on page 184)

If you
make it of **WIRE**
make it of the best!

... And the best wire for you, of course, is the wire that will help you put your product out in front in a competitive market. Whether you make bicycles or birdcages, bolts or nails, tire chains or corn poppers, there is a U·S·S American Manufacturers Wire that will meet your needs precisely.

When you specify U·S·S American, you get more for your money in three ways:

1. **Versatility**—You can select exactly the right wire from among more than 400 different types, comprising every conceivable shape, size, finish and metallurgical characteristic.
2. **Quality**—You know the wire is *good* wire, backed by over a century of steel-making and wire-making experience.
3. **Service**—Our specialists are always at your service—*gratis*—to help you select and use the wire best suited to your purpose.

Today is none too soon to begin giving your product the benefit of the best steel wire money can buy. Write for a free consultation.

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

COLUMBIA STEEL COMPANY

San Francisco

Tennessee Coal, Iron & Railroad Company, Birmingham, *Southern Distributors*
United States Steel Export Company, New York

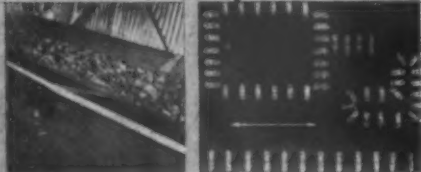
UNITED STATES STEEL



Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

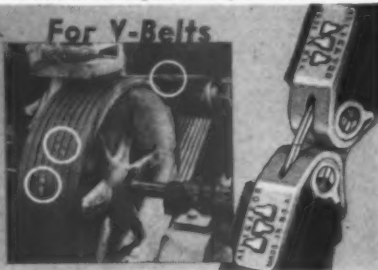
For Conveyor Belts



FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from 1/4" to 1 1/2" thick and of any width. The view on the right shows the various types of rips and patches that can be made with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

For V-Belts



ALLIGATOR V-Belt Fasteners are now being widely used to fasten B, C and D, open-end V-belt of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for Bulletin V-14.

For Transmission Belts



ALLIGATOR Steel Belt Lacing is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to 3/8" thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

FLEXIBLE STEEL LACING COMPANY
4697 Lexington Street, Chicago 44, Ill.

(Continued from page 182)

tion. Nothing is added to the air, the air-borne gases (odors) are simply extracted by the carbon.

Dorex Type G Panels consist of sturdy light-weight metal frames housing a battery of perforated tubes containing specially treated activated carbon. Their installation normally requires little or no alterations. Complete data may be obtained from the manufacturer, W. B. Connor Engineering Corp., 114 East 32nd St., New York 16, N. Y.

PLASTICS SPECIFICATIONS QUIZ

Of use to manufacturers considering plastics is the newly-published "Plastics Specifications Quiz" issued by the Creative Plastics Corporation. The first of its kind, this Quiz is designed to save time

PLASTICS SPECIFICATION QUIZ

from
Creative
PLASTICS CORP.
100 EAST AVENUE, BROOKLYN 5, N. Y.

YOUR FIRM NAME _____ Date _____
Address _____
Individual _____

1. DESCRIBE PRODUCT IN WHICH PLASTIC PART IS TO BE USED. (See drawing number if any.) _____

2. PLASTIC PARTS INVOLVED. (See drawing number if any.)
Note: If a number of parts require detailed description, additional Quiz sheets will be sent as needed.

a. ☐ Housing ☐ Ends ☐ Connectors
☐ Feet ☐ Bushing ☐ Other (Specify on reverse side)

b. If this part has been made before in another material, why do you want to change to plastic? _____

3. REQUIREMENTS: Tensile _____
Impact delivery required? _____
Any design duty to change? _____

4. QUALITY OF PLASTIC PART DESIRED:
a. Finish (Check One) Polished _____
b. Color: _____
Would darkening of lighter shades and transparent be objectionable? _____

5. OPERATING CONDITIONS OF PLASTIC PART:
(a) Temperature range: _____
(b) Chemical: _____
(c) Strength: _____
(d) Electrical: _____
(e) Optical: _____

6. MECHANICAL FEATURES OF PLASTIC PART:
(a) Where welds are OK, may we increase if necessary? _____
(b) Can you permit a taper of 30° per inch? _____
(c) Have you incorporated chamfers, radii or corners? _____
(d) Would stress or shrinkage be dangerous? _____
(e) Are specifications simplified? _____
(f) Would a plastic thread be OK or do you want thread? _____
(g) Tolerances: _____

7. ASSEMBLY:
How are plastic parts assembled to product? (If fastening, how are components put in and offset? Have you checked enough clearance? _____)

(See reverse side for plastic and further description.)

and to prevent the use of the wrong plastic, or of the right plastic in the wrong place.

Limited to seven easy questions, it makes it possible for a manufacturer who doesn't employ a plastic engineer to give sufficient details about his product to Creative Plastics for them not only to decide whether they have a suitable materials for the manufacturer's need, but also whether he should use plastic at all.

The Quiz is easy to answer, being couched in nontechnical terms. Although it isn't intended as a substitute for blueprints, it cuts through a great volume of correspondence which normally would take several weeks or months with out-of-town firms. It furnishes the basic information which must be made available to Creative Plastics, even if blueprints are submitted. Copies of the Quiz may be had by writing Creative Plastics Corp., 963 Kent Avenue, Brooklyn 5, N. Y.

STAINLESS STEEL PARTS BY POWDER METALLURGY

While powdered metal parts of a variety of metals and alloys have assumed a position of great industrial importance, stainless steel has hitherto been only a laboratory curiosity. The Micro Metallic Company, 99-16 Metropolitan Avenue, Forest Hills, N. Y., now offers stainless steel parts by the powder metallurgy process.

Compared with powdered metal parts of other metals and alloys, stainless steel is said to offer a number of important advantages in addition to greatly increased resistance to corrosion. One of these is extremely high strength coupled with ductility (55,000 to 65,000 psi, 10% elongation), a most unusual combination for powder metal parts. A saving in raw material costs is claimed for the powder metallurgy method. Since stainless bar stock is more difficult to machine than the other commonly used metals, the elimination of this operation in the powdered metal product is another advantage. The advantages common to the powdered metal process, when applied to other metals, are also shared by stainless steel. These advantages include mass production at low unit cost.

The process is well adapted to making machine parts where corrosion resistance or self-lubrication is an advantage, or where the particular combination of high strength and ductility is desired. In addition parts for application in chemical machinery, such as pumps impellers, dyeing and textile treating machinery, etc. are practical. The product is readily polished to a high finish.

SUBSTITUTE MAGNESIUM CASTINGS FOR IRON PARTS

Critical shortages of material essential to grey iron foundry operations have resulted in wide industrial substitution of magnesium castings for iron parts, according to John F. Conroy, III, president of the National Magnesium Corporation of Elkton, Maryland, and New York City.

Deluged with the greatest backlog of orders in the history of the industry, grey iron foundries have been handicapped in their production by recent Government lumber restrictions and dwindling stockpiles of coal and coke, he said.

In an effort to break this peace-time bottleneck, users of this type of casting have turned to other metals to replace parts in their original designs calling for grey iron.

Magnesium is being widely used as a replacement since its alloys can be fabricated by practically all of the known methods. Magnesium alloys may be sand-cast, cast in permanent molds, die-cast, rolled, formed, forged or extruded. It can be torch-welded, arc-welded, or spot-welded as specifications indicate.

Since it is roughly one-fifth the weight of steel, foundries and core makers have discovered that workers can easily lift

(Continued on page 186)

preassembled

to reduce

your costs



Here are pre-assembled fastener units designed specifically to save you money!
When you order SEMS you get both the washer and the screw delivered as a single unit.

Because they simplify ordering and storing, eliminate costly hand assembly and special handling methods, and make driving faster and easier SEMS save you money in every phase of operation. Quality is assured because there's no chance to "forget" the washer! Send for samples today and test them yourself!

use ***SEMS*** the ***MODERN***
fastener unit

SEMS are pre-assembled washer and screw units in which the washer is held on the screw by the rolled thread and is free to rotate.

SEMS ARE AVAILABLE FROM THE FOLLOWING MANUFACTURERS

American Screw Co.
Providence, R. I.

Central Screw Co.
Chicago, Ill.

Chandler Products Corp.
Cleveland, Ohio

Continental Screw Co.
New Bedford, Mass.

Corbin Screw Division
The American Hardware Corporation
New Britain, Conn.

Eaton Mfg. Co.
Reliance Division
Massillon, Ohio

The Lamson & Sessions Co.
Cleveland, Ohio

Manufacturers Screw Products
Chicago, Ill.

National Lock Co.
Rockford, Ill.

The National Screw & Mfg. Co.
Cleveland, Ohio

New England Screw Co.
Keene, N. H.

Pheoll Manufacturing Co.
Chicago, Ill.

Russell, Burdsall & Ward
Bolt & Nut Co.
Port Chester, N. Y.

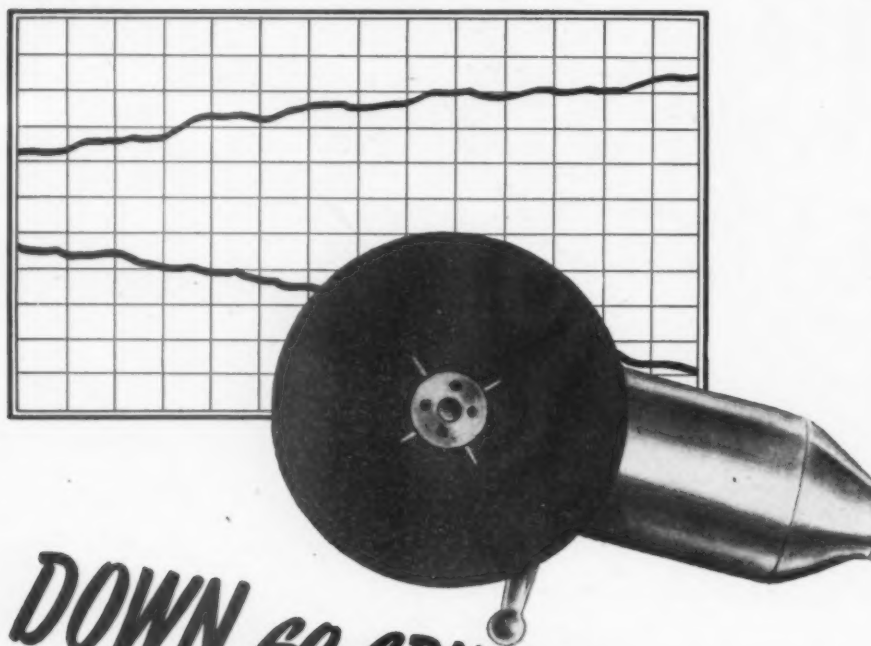
Scovill Manufacturing Company
Waterville Division
Waterville, Conn.

Shakeproof Inc.
Division of Illinois Tool Works
Chicago, Ill.

Steel Co. of Canada, Ltd.
Hamilton, Ont., Canada

WELDISK

UP GO GRINDING SPEEDS



DOWN GO GRINDING COSTS

Prove it to yourself with FREE SAMPLES

If the test of the pudding is in the eating, the test of an abrasive is in the grinding. It will pay you to test WELDISKS yourself – to prove to your own satisfaction that WELDISKS are superior abrasives for use on high-speed pneumatic grinders as well as on any portable electric grinder. You will be amazed to find that WELDISKS outlast ordinary disks by as much as 2-to-1... partly because of their cold-setting cement (a scientific formula – not glue or resin) that actually improves with age, and partly because of their laminated backing of fibre for stiffness plus cloth for strength. A test of WELDISKS will convince you of their superiority. Write for free samples. State size of disk, grade of grit, and brief description of work to be done. WELDISKS will be sent promptly without obligation to you.



Abrasive Products, Inc.

SOUTH BRAINTREE 85, MASSACHUSETTS

JEWELOX • JEWEL EMERY • JEWEL GARNET • JEWELITE • JEWEL FLINT • NEW PROCESS

(Continued from page 184)

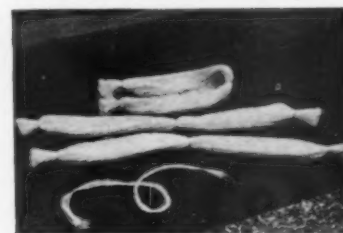
relatively large flasks or core boxes of magnesium singlehanded. For instance, a grey iron casting weighing 100 pounds can be duplicated with only 20 pounds of magnesium. Cranes and levers needed to raise the 100 pound casting can be dispensed with since one man can handle the 20 pound casting alone.

Although magnesium castings cost more to produce than similar grey iron castings, the difference in machining time and ease of handling more than offset the original difference in price.

Since costs of handling materials are an important operational item in production set-ups, economics arising from efficient and rapid material moving operations are reflected in a general lowering of production costs.

NEW FIBERGLAS ROOFING MOP

A Fibreglas mop unit, designed to cut costs and save time in applying bitumen to a roof deck or built-up roofing felts, is announced by Owens-Corning Fibreglas Corporation, Toledo, Ohio. The new product consists of warp-like bundles of glass yarns, 36 inches in length and



Fibreglas does not char or burn.

weighing approximately two pounds. Two or three of the bundles are attached to a handle to make a mop.

Outstanding feature of the Fibreglas mop unit is its long service life. A Fibreglas unit on test has been used over a period of nine days to apply bitumen to more than 100,000 square feet of roofing in three-ply construction, without showing signs of serious deterioration. Mop units now commonly used must ordinarily be replaced every four to eight hours, or after applying bitumen to approximately 10,000 square feet of roofing area.

Chiefly responsible for the long service life of the Fibreglas units is the fact that the glass yarns do not burn or char when dipped into the bitumen which is customarily applied at temperatures ranging between 400 and 600 degrees F. The organic yarns incorporated in the conventional mop unit char at temperatures below 400 degrees F. Charring materially weakens the organic yarns, whereas strength of the glass yarns is unimpaired by dipping in the hot bitumen.

In use, the ends of the yarns in the Fibreglas unit flay out, making each yarn a miniature brush. This contributes to a smooth application of the bitumen, thus reducing waves due to mopping and helping to eliminate trapped air pockets which sometimes cause built-up roof failures.

G.E.'s *TOUGH* RING OF STEEL

Your Best Safeguard For Wiring

against chemicals

against weather



General Electric conduit is carefully selected from the best steel pipe—a pipe that will not open when bent. Two types are available—each specially coated for specific kinds of corrosion.

G-E White Conduit has a hot-dipped zinc coating that gives lasting protection against heat, cold, sunlight, condensation, rain and sleet—against all types of atmospheric corrosion.

G-E Black Conduit has a baked-enamel coating that gives lasting protection against acids, liquids, fumes, and oil—against all types of chemical corrosion.

Choose General Electric conduit where you require the best possible protection for wiring. Exhaustive factory tests assure you that G.E.'s rigid conduit will withstand the most rigorous conditions.

For further information, see the nearest G-E Merchandise Distributor or write to Section CI-777, Appliance and Merchandise Department, General Electric Company, Bridgeport, Conn.

GENERAL ELECTRIC

HOW TO GET *Muscle* OR *Mileage* FROM SPRING WIRE

One of these
springs weighs
2½ pounds!

177,000 of these
springs weigh
2½ pounds!

Springmaking is a business of contrasts, not only in size and variety of product, but in degree of accuracy and range of stresses. Wallace Barnes experience spans the extremes of spring usage, in materials and types of springs. Here is specialized skill to design and produce *your* spring, according to the best and newest methods of tool design, mechanical production and heat-treatment. Whether your order is large or small, ask a Barnes service representative to check your specifications. There is no obligation.

ENLARGED
VIEW

Barnes-made springs
Engineered Pep and Power

WALLACE BARNES COMPANY

Division of Associated Spring Corporation

Bristol
Connecticut

How many bales can a
hay-baler bale...
when a hay-baler's
busy balin' hay?"



There's nothin' like a good old hot-stove argument in the winter time . . . but there's no time for it when you're hayin'! Thousands of farmers, and owners of hay-baling machines, know what we're talking about now. For on most of these machines is a corrosion-resistant Veeder-Root Counting Device that accurately records the number of bales wired up "from can-see to can't-see." So the farmer who hires the machine knows what he gets for his hire—and there's no room for argument on either side of the deal. Both parties have a cut-and-dried proposition (and *that ain't hay*). What's more, there's no problem with time-checking, or figuring out-of-service time.

The Counting House of Industry



VEEDER-ROOT INC.
Hartford 2, Connecticut

In Canada: Veeder-Root of Canada, Ltd., Montreal
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Many types of farm equipment, from tractors to fruit-sorters and canning machines, have built-in Veeder-Root *Countrol* in many different forms, provided by many different types of Veeder-Root Devices. *Your* equipment, too, can profit you more if it has this added utility . . . this proof of performance and guarantee . . . this protection against all the errors that creep in where there's guesswork. Write, and find out what *Countrol* can do for you.

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Come to headquarters for the greatest variety of top-quality accessories available . . . mounted and grinding wheels in all grades, grains, shapes and sizes . . . tool and cutter wheels . . . cups . . . internal wheels . . . wheels for center lapping machines . . . drum sanders and bands . . . wire brushes . . . felt and rubber polishers . . . miniature cutters,

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Pace setting CHICAGOS, backed by half a century of experience, are skillfully engineered to turn out work in less time; to increase production per man-hour, cut time, cut costs!

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64 pages of illustrations of wheels and other equipment, many in actual size and color. Write for copy today.

FREE ENGINEERING SERVICE.

Let us help you. If you have a grinding problem, refer it to us. Our abrasive engineers will analyze it and make tests to determine the correct size, grain and grade to make wheels that will do your job in the best possible way.

CHICAGO WHEEL & MFG. CO.
1101 W. Monroe St., Dept. PG, Chicago 7, Ill.

Send Catalog. Interested in

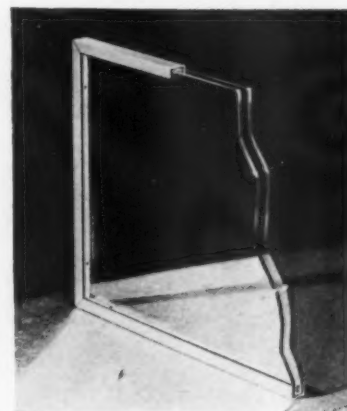
Name

Address

DOUBLE GLAZED WINDOW INSULATING UNIT

Illustration shows new type, efficient double-glazed window insulating unit known as Twindow for industrial, business, commercial, home and other uses, announced by the Pittsburgh Plate Glass Company, Pittsburgh, Pa.

Twindows are integral insulating units of two or more plates of glass enclosing a quarter-inch or half-inch hermetically sealed air space. One of the revolutionary features is the use of hollow aluminum tubing to separate and hold the glass plates in position. The entire unit is framed with a light-gauge stainless steel channel (.015 to .020) with the channel legs extending $\frac{3}{8}$ " inward on the surface of the glass from the base around its periphery to give maximum protection during installation and use.



Two plates of glass enclose hermetically sealed air space in Twindow unit

Constituting one of the most efficient thermal and dust insulation units yet developed, says the company, the Twindow unit virtually prevents condensation, one of the most difficult transparent fenestration problems to solve in all types of application. This permits use of larger windows in offices, stores, and homes and at the same time appreciably reduces heating and air conditioning costs.

Clear polished plate glass is used in the construction of standard unit. Units can be fabricated with special glasses to meet practically all needs. It is possible to produce certain simple cylindrical bends with definite limitations. Safety glasses can also be used, as can Herculite heat-tempered glass which has approximately four times the impact strength of plate glass.

1 1 1

HIGH DENSITY POWDER METALLURGY ALLOYS

J. Kurtz, Director of Research, and Vice-President of the Callite Tungsten Corporation, Union City, N.J., has announced the development of a series of high density alloys. These alloys to be known as Dense Alloy 112 will be available in three general types. These are:

(Continued on page 194)

**Get this NEW
FREE BOOK of better
ideas for packaging
your product!**

Whatever your product—if you have a product-packaging problem—you'll find ideas you can use in this new, free book about KIMPAK* Float Packaging.

Blocking and Bracing...Flotation Packaging...Absorbent Packaging...Surface Protection—these Four Basic Methods of interior packaging are covered for you in detail. Photographs—46 of them—illustrate exactly how these methods are used by some of America's largest industries. And a convincing display of 11 outstanding KIMPAK advantages will show you how KIMPAK—clean, soft, resilient—can

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Please rush my FREE COPY of the new idea book, "KIMPAK FLOAT PACKAGING".

P-746

Firm _____

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Attention of _____

Every feature you want in a BRONZE GLOBE VALVE with Full-way Disc...

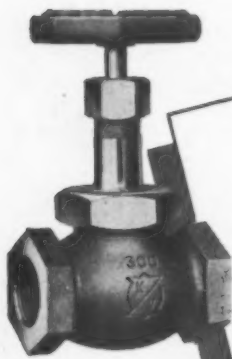
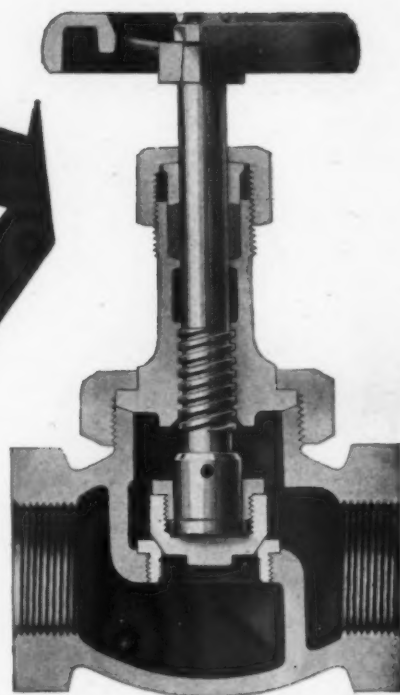
is in this
KENNEDY
DESIGN

You can use this Kennedy design on high temperature steam, water, oil or gas lines with full confidence that it will give complete satisfaction.

Notice the sturdy construction of every part . . . the renewable disc and seat ring . . . the full-way disc area . . . the ample pipe-end clearances and packing space . . . the true union joint made by the body-bonnet connection . . . and the many other details that provide what you want in a full-way disc globe or angle valve.

These valves are furnished in a full range of sizes for 200-lb. and 300-lb. steam pressure at 550° F. and for cold water, oil or gas pressures up to 600-lb. Complete description, specifications, dimensions and prices are given in the 240-page Kennedy Catalog which will be sent on request.

Buy from our Distributor



YOU WANT THESE VALVE FEATURES ... you'll find them in this KENNEDY design

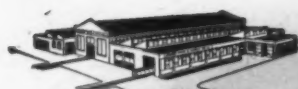
- ① **Generous Strength . . .**
Body and bonnet are of high-grade dense metal with ample thickness and rounded fillets. Stem has large diameter and extra large number of contact threads.
- ② **Easy Operation . . .**
Stem and stem contact surfaces are accurately threaded. Deep stuffing boxes permit tightness without undue pressure on packing. Large handwheel gives firm, comfortable grip.
- ③ **Lasting Tightness . . .**
Discs and seats seat accurately, and their sturdy design resists distortion and has special provisions for take-up of wear.
- ④ **Long Life . . .**
Many Kennedy valves have been in daily use a quarter century and more.
- ⑤ **Convenient Repacking . . .**
Glands and packing are easily accessible.
- ⑥ **Economical Maintenance . . .**
Long wear built into all parts, and adjustments or other attention are seldom required.



THE KENNEDY VALVE MFG. CO.
Elmira, New York

KV-114

KENNEDY valves - pipe fittings - fire hydrants



AT LOS ANGELES



AT ST. LOUIS



AT PASSAIC



AT SOUTH BOSTON

MIDWEST PIPE FABRICATING PLANTS

Make a ***CONTINUOUS CHECK***

on the **HIGH QUALITY** of

**MIDWEST
WELDING FITTINGS**

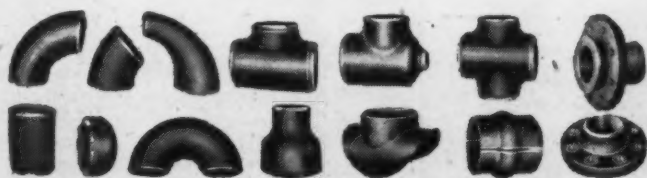


Four modern Midwest pipe fabricating plants supply piping for all purposes and pressures to a great variety of industries from coast to coast. These Midwest plants are large users of Midwest Welding Fittings. This regular everyday use of these fittings in fabricating both simple and complex piping sub-assemblies provides an accurate and continuous check of their quality . . . of correct dimensions . . . of uniformity . . . of accurate angularity, etc.

But this daily use in our own fabricating plants does more than check quality . . . it makes certain that Midwest Fittings are thoroughly practical . . . that

they meet the needs of modern piping practices from a design standpoint . . . that they are easy to lay out and weld. For example: the accuracy of Midwest machining methods makes it possible for the user to cut his pipe before receiving his Midwest Welding Fittings . . . he can depend upon the catalog dimensions. Buyers of Midwest Welding Fittings get the benefit of this unique situation. We sell you the same fittings we use . . . assuring you of quality fittings that are correctly designed and that save time and money on many different kinds of piping jobs. Bulletin WF-41 gives all the facts; ask for a copy.

**MIDWEST WELDING FITTINGS IMPROVE
DESIGN AND REDUCE PIPING COSTS**



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PIPING & SUPPLY COMPANY, Inc.

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Sales Offices: New York 7—30 Church St. • Chicago 3—645
Marquette Bldg. • Los Angeles 33—520 Anderson St. • Houston 2—
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Rates are drastically down from prewar days — a new economy that makes this service a greater money-maker than ever for thousands of firms throughout the nation.

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Shipments go everywhere at the speed of flight between principal U. S. towns and cities, with cost including special pick-up and delivery. Same-day delivery between many airport towns and cities. Fastest air-rail service to and from 23,000 off-airline communities in the United States. Service direct by air to and from scores of foreign countries in the world's best planes, giving the world's best service.

| RATES CUT 22% SINCE 1943 (U. S. A.) | | | | | |
|-------------------------------------|--------|--------|---------|---------|----------------------------|
| AIR MILES | 2 lbs. | 5 lbs. | 25 lbs. | 40 lbs. | Over 40 lbs. Cents per lb. |
| 149 | \$1.00 | \$1.00 | \$1.00 | \$1.25 | 3.07c |
| 349 | 1.03 | 1.18 | 2.30 | 3.68 | 9.21c |
| 549 | 1.07 | 1.42 | 3.84 | 6.14 | 15.35c |
| 1049 | 1.17 | 1.98 | 7.49 | 12.38 | 30.70c |
| 2349 | 1.45 | 3.53 | 17.45 | 28.24 | 70.61c |
| Over 2350 | 1.47 | 3.60 | 18.42 | 29.47 | 73.48c |

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Phone AIR EXPRESS DIVISION, RAILWAY EXPRESS AGENCY
Representing the AIRLINES of the United States

(Continued from page 190)

Type P — composition largely Tungsten, Copper, Nickel and small percentages of other alloying ingredients.

Type E — composition largely Tungsten, Cobalt, Silver, etc.

Type Y — composition largely Tungsten, Cobalt, Nickel, etc.

These new alloys will find their major application where high strength and high density is of prime importance. For example, they are especially adaptable as balancing weights where space is a prime factor. Because of their ready machinability, precise balancing can be attained such as is required in rotors and governors for gyroscopes. Ordinary machining operations such as milling, shaping, turning, drilling, tapping, etc. present no difficulties.

The high density of these alloys becomes quite apparent by comparison, for example, with lead. Lead has a density of 11.3 gms. per cubic centimeter equivalent to 185 gms. per cubic inch or .41 pounds per cubic inch. These new dense alloys are 17.3 gms. per cubic centimeter, 283 gms. per cubic inch, or .620 pounds per cubic inch.

Dense Alloy 112, produced by powder metallurgy, is available in round, square and special shapes. The scope of these alloys is further increased by the fact that they can be brazed or soldered by standard commercial methods. Other advantages result from the self-fluxing properties of the alloy. Under certain conditions larger billets or unusual shapes can be formed from simple forms.

✓ ✓ ✓

COLLOIDAL GRAPHITE COMPOUND PREVENTS BELT-SPARKING

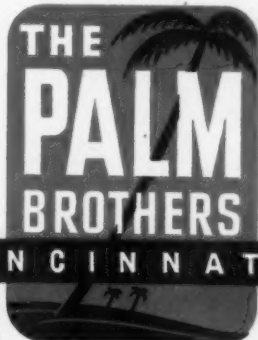
A new technical bulletin relating to the control of static electricity developed on drive and conveyor belts, has just been issued by Acheson Colloids Corporation, Port Huron, Michigan. Its purpose is to assist in the prevention of belt-sparking in a wide variety of industries. The information contained in this bulletin should be of special interest to operators of powder plants, ordnance works, paint and lacquer companies, chemical concerns, flour mills, and other process industries in which dust is a factor. The technique described involves the application of colloidal graphite (dispersed in quick-drying solvents and diluted with carbon tetrachloride) to the under or pulley side of the belts — which treatment results in a tenacious and electrically conductive film of graphite which continuously "bleeds" static electricity to ground. The static charges which produce sparks on untreated belts are the result of (1) high-speed flexing of the belts, (2) slippage on pulleys, and (3) friction between the belt and air. Methods of grounding the shafts, to which pulleys are affixed, are described. Film-testing and film-maintenance procedures are also covered. Treatment on both sides of the belt is recommended in some cases. Technical Bulletin No. 140.1 — Acheson Colloids Corporation, Port Huron, Michigan.



DISTRIBUTOR IDENTIFICATION *with* PALM BROTHERS DECALS

Call attention to your distributors—and get that extra sales lift through the eye catching dominance of Palm Brothers Decals.

Magnetic in color, economical in price, remarkable in durability, these famous decals are your marks of distinction, exclusively yours.



Samples and sketches submitted without obligation. Write today for Catalog No. 10.

Decalcomania Co.

CINCINNATI..12...OHIO..U.S.A.

Use HIM...and the



picture is complete



Key figure in modern efficient buying, your local CARBORUNDUM distributor offers prompt intelligent service for your abrasive requirements. No one is in better position to give you what you want, how you want it, and when you want it. From large and varied assortments of standard types, sizes and shapes, your order for wheels, coated abrasives, and sticks by CARBORUNDUM receives immediate attention.

Prompt delivery is assured. Delays are eliminated. There is no need, on your part, to carry extra large inventories.

Whether it's a standard order, a request

for product information, a question of availability and delivery, or even advice on an engineering problem, you will find your CARBORUNDUM distributor ready and able to serve. In his daily contacts, he is called in on many abrasive applications involving a variety of problems. Often he is able to offer a new solution. And when the situation is unusual, he can always call in a CARBORUNDUM abrasive engineer for practical assistance.

In the handling of abrasive products by CARBORUNDUM, your industrial supply distributor is backed by outstand-

ing product reputation. These abrasives often help to do a better job, faster and cheaper.

Remember, for standard applications, your CARBORUNDUM distributor can give you the right abrasive product for the job—*plus* unexcelled sales service. The next time a CARBORUNDUM distributor's representative calls, give him the opportunity to explain more fully the benefits you obtain from dealing with this ideal source of supply for abrasives. The Carborundum Company, Niagara Falls, New York.



*A good rule for good distributor service... **CALL IN** your*

CARBORUNDUM DISTRIBUTOR

TRADE MARK

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company



Tiger Grip

**The GREATEST IMPROVEMENT
IN WORK GLOVES IN THE
PAST TWENTY YEARS!**

Entirely different from any glove intended for the same purpose! *Outwears several pairs of ordinary woven fabric gloves.* Made of specially knitted material with hundreds of "loops" in every square inch, to cushion and protect the hand. Can be washed without excessive shrinkage—and hold their shape! Treated with Johnson's "DRAX" to make them water repellent! Tested in laboratories and under actual working conditions.



Send For New CATALOG

Big, new catalog lists full line of ADVANCE work gloves including leather palm gloves, flannel gloves, wire stitched gloves, welder's gloves, etc., as well as a complete line of safety and protective clothing for every industry.

"A Better Work Glove For Every Purpose"

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GLOVE MANUFACTURING CO.

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Detroit • Toledo • Chicago • Rome, Ga.

Industrial Trucks Cut Handling Costs

**Savings of 50 Per Cent Reported In Addition to Substantial
Savings in Warehouse Space**

Iron and steel manufacturers, together with fabricators of iron and steel products, use more electric industrial trucks than any other industry in the United States. Moreover, they use more than 17 per cent of all such trucks in service in American industry, according to a survey, result of which were announced by the electric Industrial Truck Association, Chicago.

The survey shows that, as of Dec. 31, 1945, there were some five thousand plants using a total of 34,802 electric industrial trucks to solve material handling problems, exclusive of government plants. In the iron and steel industry (including fabricators of iron and steel products), 965 plants were using 6,094 of these trucks on that date.

Runners-up to the iron and steel industry in the use of the equipment are transportation and public utilities (5,091 trucks); government plants and agencies (4,980 trucks); and the automobile manufacturing and automobile equipment industry (2,912 trucks).

Ability of electric trucks to handle the heavy loads characteristic of the iron and steel industry; round-the-clock availability of the equipment; and low operating cost are reported to be the three basic reasons for specifying battery-powered trucks in plants manufacturing or fabricating ferrous metals.

Costs Slashed 50%

Here's an interesting illustration of how the lift truck has slashed handling costs by 50 per cent at the Brooklyn, N. Y. warehouses of Bowne-Morton



A 2400-lb. load of sugar

stores, Inc. The lift truck in action in this photograph is carrying a 2,400-pound load of sugar from the hold of a lighter. In less than three minutes the heavy load is transported a distance of 200 feet and then stacked in warehouse.

Bowne-Morton purchased in 1944 two Towmotor lift trucks which have been in use ever since for as long as 16 hours a day, six days a week—carrying, stacking and loading such bulky materials as crude rubber, drums of oil, reels of cable, boxes of canned goods, bags of spices, cocoa beans and coffee. Previous to the 1944 purchase of the lift trucks, these materials had to be handled either by hand, hand truck or block and tackle.

The lift trucks are credited with producing an important 25 per cent saving in warehouse space, since the heavy pallet loads can now be stacked to greater heights than was ever before possible.

Handle Foundry Ladles

Fork trucks now are being used to handle ladles of molten metal in foundries by means of a simple attachment furnished recently by the Elwell-Parker



Handling ladles of molten metal

Electric Co., Cleveland. This attachment is in the form of an apron which slips over the tines of the fork and is held in place with two bolts. Outer edge of the apron is cut away in semi-circular shape, according to the circumference of the ladles. Brackets are welded to upper edge of apron in alignment to conform with arms on the ladle. Attachment and method of using it are shown in accompanying illustrations.

The ladle filled with molten metal is picked up and transported to molds in a fraction of the time formerly required, conserving heat and expediting the casting operation. This particular fork is of the notched type for handling railroad car wheels in upright position. Trucks with this fork and attachments, therefore, are enabled to transport the ladles in wheel foundries, carry out cast wheels while still red hot, and thereafter move as many as five finished wheels on the fork at one time to storage or point of shipment.

Loads Trucks and Trailers

A compact, light weight fork truck designed to lift, carry, stack and tier unit package loads weighing up to 1000



Unloading trucks and trailers

pounds, and to operate within narrow limits, the Truckloader made by Clark Trucktractor, is specially adapted for

(Continued on page 200)



DOUBLE-TIME DUTY WITH...

TWIN BWH CONVEYOR BELTS!

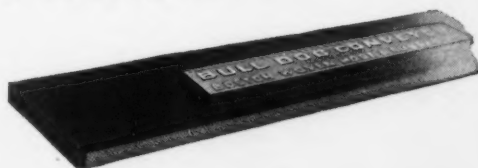
Like many another company, a Midwest power producing plant was called on to increase vastly its output in the war years. In doing it, equipment took an awful beating... and these BWH twin conveyor belts worked double time—16 full hours a day, year after year. In addition, the belt speed was increased one third... but these rugged belts took it in their stride.

Multiplied instances like this have proved that BWH Conveyor Belts are able to absorb more punishment than they were originally designed to take. Made by the famous ROTOCURE process of continuous vulcanization, they have won the unquali-

fied acceptance of many leading companies over the country.

When next you need a conveyor belt, look to BWH for dependable ruggedness... BWH distributors for dependable service!

HAVE YOU A JOB WHERE STAMINA COUNTS? Bring us your toughest problems... we're specialists in solving them. Consult your nearest BWH distributor, or write to BWH direct.

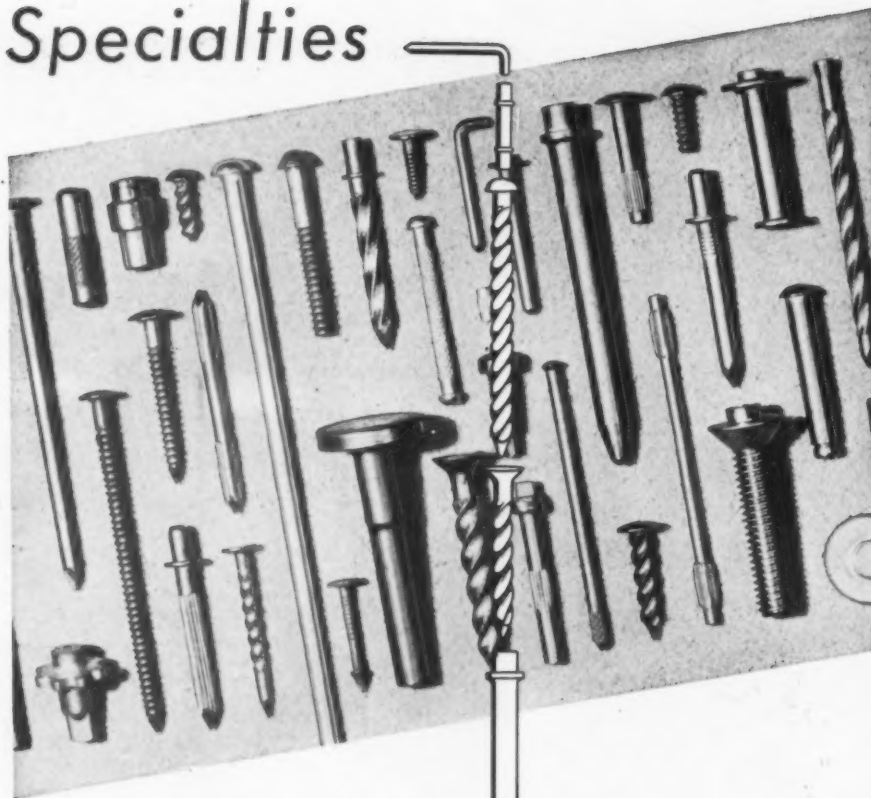



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Specialties



Cold-forged
quickly and  economically

The special rivet, nail or threaded part you need may be cold-headed—and with substantial economy. With these advantages we also offer you the added strength inherent in cold-headed parts.

Chances are, too, that the metal you require is an everyday material with us. A wide selection of sizes and metals, plus almost a century of experience in working them, is at your service.

Tell us about your problem. Send sketch or sample of the part you need. No obligation. Ask for free catalog.

JOHN HASSALL, INC.

ESTABLISHED 1880

404 OAKLAND ST., BROOKLYN 22, N. Y.



Special nails, rivets, screws
and threaded parts

(Continued from page 198)

fast, low cost loading and unloading of highway trucks and trailers. It is maneuverable in narrow aisles and has an exceptionally small turning radius of 57 inches. With its light weight it will run safely in and out of trucks and trailers, and can be used in elevators which cannot handle heavier units.



This load consists of \$708,000 in one-dollar bills

Specific benefits achieved by the Truck-loader are a saving of more than 75 percent of man-hours required for loading and unloading highway trucks and trailers; reduction to a minimum of losses due to breakage, spoilage and pilfering; elimination of up to 90 percent of accidents and injuries with their attendant insurance cost; reduction of costly idle or "standing" time of trucks representing a 4 billion dollar investment; and the reflection of these savings in better earnings for the nation's truck operators whether highway transportation companies or manufacturers operating private trucks.

Four of the six existing types of electric industrial trucks have been preferred over all other designs in one or more of the past 32 years, it has been established in a user preference survey conducted by the Electric Industrial Truck Association.

The fork truck is the newcomer to all-star rank. The versatile battery-powered fork truck, which came into the picture toward the close of World War I, captured from five to 10 per cent of sales quickly and held that position until 1930, then started a strong upward trend in popularity that passed 30 per cent by 1938 and reached 50 to 60 per cent in 1943-4.

Low-lift and high-lift designs remain the choice where vertical storing is relatively unimportant and dunnage can be used. Industrial engineers have found that these models can raise, transport and deposit more payload per pound of truck than the fork truck. Moreover, they can function in narrower aisles than fork trucks of equivalent capacity.

Tractors, which from 1916 to 1922, comprised one-third of all electric truck purchases, declined to about five per cent in 1941 but moved upward again to reach approximately 10 per cent by 1944.

Electric industrial trucks have a life in excess of 25 years, according to the association.

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is still the most time-tested
material for thousands of
mechanical applications

COUPLINGS AND VALVE DISCS...

... of Sirvis leather are made to combine the
required degrees of flexibility and freedom of
action with maximum resistance to pressure,
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machine parts are developed by Sirvis Engi-
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46 YEARS OF ENGINEERING



Lyon's Product Research Department which has subjected every Lyon product to a searching functional analysis.

One of the completely equipped Lyon toolrooms.

Lyon engineers working on product modernization in our extensive Development Division. This division, headquartered in a separately equipped building, has full facilities for producing pilot models of new and improved products designed by the Product Research Department.



Adjustable Shelving • Tool Storage Units • Lockers and Locker Racks • Bar, Pipe and Rod Units
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"KNOW-HOW"

*Back up Today's Production of
More and Better*



LYON

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Lyon's program for greater and more diversified production extends far beyond plant and machinery expansion at Lyon factories.

Every item in the Lyon line has been subjected to critical analysis by Lyon plant and field engineers. Correlation of data on customer needs and production facilities has been used as a basis for modernization

in both design and construction that sets new standards for efficiency and economy. Maximum production of these greatly improved pre-war Lyon products and several entirely new ones (see list at bottom of opposite page) still await a normal flow of raw materials. But, output is mounting. And ample additional modern plant facilities are ready to "roll."

LYON METAL PRODUCTS, INCORPORATED

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MORE THAN **70** OAKITE MATERIALS

to solve your production cleaning problems

The "Big 4" of Cleaning

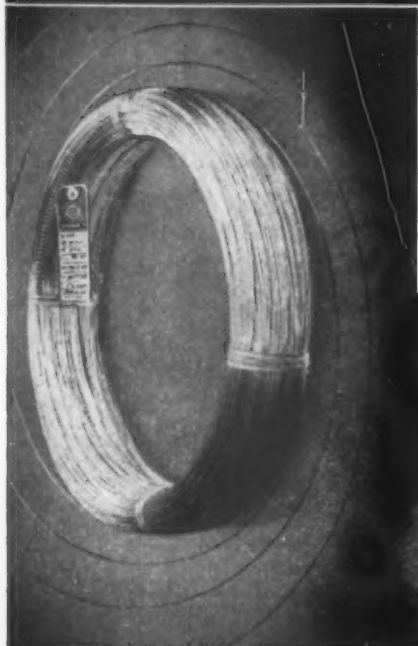
Before you place that order for cleaning materials consider the "big 4" advantages offered by Oakite:

1. A list of over 70 cleaning materials scientifically designed by Oakite to derust, degrease, decarbonize, etc.
2. Dependable "know-how" grown out of Oakite's 37 years research and actual maintenance-production cleaning.
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OAKITE PRODUCTS, INC., 54 Thames St., NEW YORK 6, N. Y.
Technical Service Representatives Located in All Principal Cities of the United States and Canada

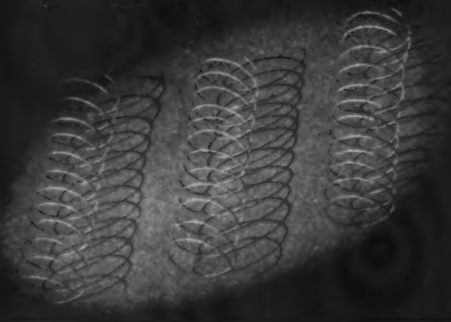
OAKITE *Specialized* **CLEANING**
MATERIALS • METHODS • SERVICE • FOR EVERY CLEANING REQUIREMENT

JOHNSON XLO *Music Wire*



Special Alloy Finish

Ideal for products coming in contact with hands—no tarnish—no oxidization—superior to tin. This new Johnson smooth satin alloy finish reduces tool wear—solders easily—will withstand temperatures up to 700° Fahrenheit. Valuable qualities that Johnson research and modern production have created for post-war manufacturing.



JOHNSON STEEL & WIRE CO., INC.
WORCESTER 1, MASSACHUSETTS.
NEW YORK AKRON DETROIT CHICAGO LOS ANGELES TORONTO

DUAL RAILROAD AND HIGHWAY VEHICLE

Completion of engineering and design for the post war models of the Evans Auto-Railer, the dual purpose railroad and highway vehicle, is announced by Fred Keihn, manager of the Auto-Railer division of Evans Products Co., Detroit.

Auto-Railers are equipped with retractable steel flanged pilot wheels to hold the vehicle on railroad tracks. Tractive power is provided by standard vehicle wheels, equipped with special tires designed for maximum traction on wet and slippery rails. For highway operation, the pilot wheels are retracted by controls from the driver's seat. A full speed reverse gear is incorporated into the standard truck shift for rail operation.



Auto-Railers are equipped with pilot wheels to hold vehicle on track

Two models of the Auto-Railer will be produced in 1946, a 1½ ton railroad maintenance of way truck and a ¾ ton railroad inspection car. The 1946 inspection car will have an all-steel body, combining the strength of a panel truck with the comforts of a deluxe station wagon, according to Keihn.

Engineering improvements developed during the war in production of Auto-Railer cars for the army have been incorporated into the new models. These include a one-third reduction in overall weight, simplified hydraulic retraction gear for the pilot wheels and improved weight distribution.

1 1 1

NEW PLASTIC HAS UNUSUAL CHEMICAL AND HEAT RESISTANCE

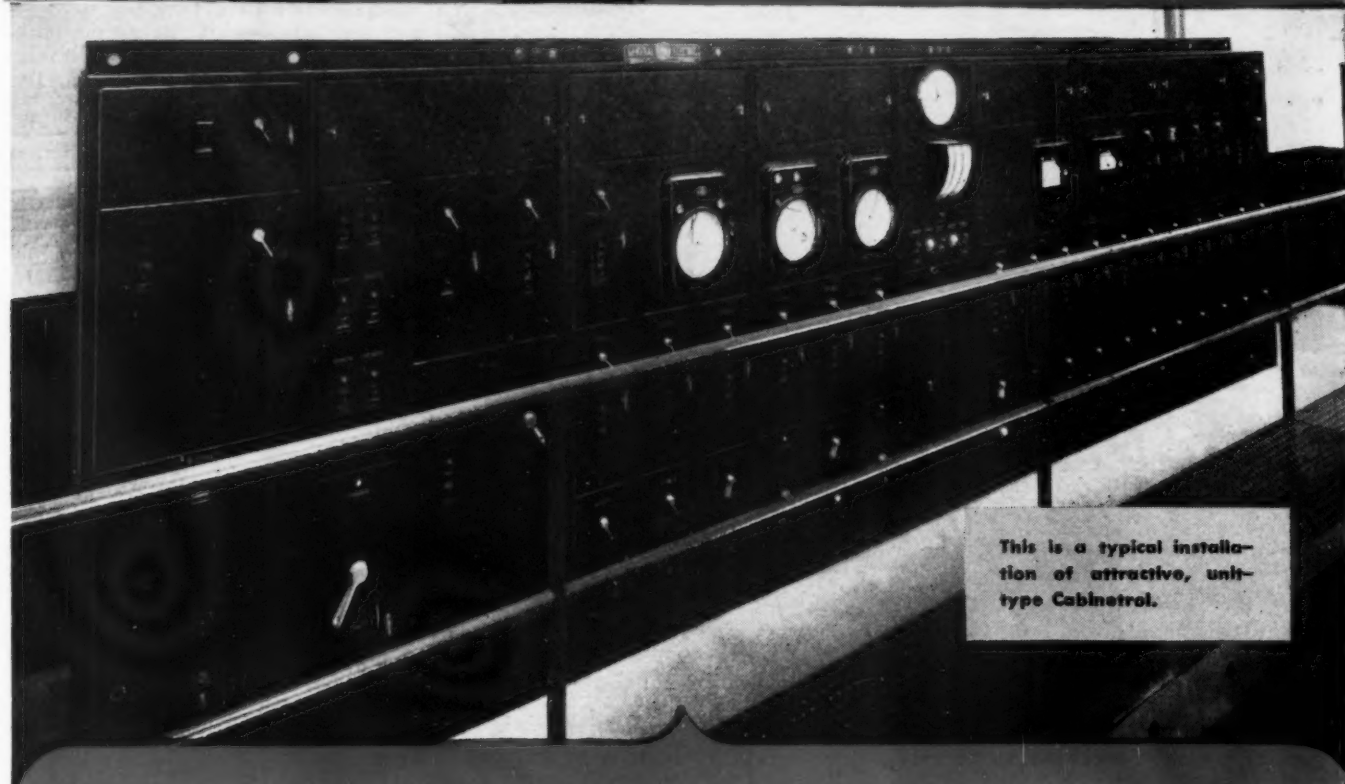
New industrial plastic that withstands acids which dissolve gold and platinum and retains its strength and form at higher temperatures than any known organic material was recently announced by E. I. du Pont de Nemours & Co., Inc.; Wilmington, Del. No substance has been found which will dissolve or even swell the polymer, according to Dr. Malcolm M. Renfrew.

The plastic material, tetrafluoroethylene resin which is to be known by the trademark "Teflon," was manufactured for special military uses during the war. Limited amounts in the forms of sheets, rods, tubes, coated wire, tape and fabricated sections are available for experimental purposes. Difficulty in fabrication and high cost of manufacture are conditioning factors in the plastic's present stage of development.

Speaking of the material's chemical resistance, Dr. Renfrew said that "such potent reagents as aqua regia, chlorosulfonic acid, acetyl chloride, boron trifluoride

(Continued on page 206)

HODGE-PODGE CONTROL IS EXPENSIVE!



This is a typical installation of attractive, unit-type Cabinetrol.

Trim, Modern CABINETROL Cuts Installation Time and Cost

Rambling, space-taking racks are a thing of the past. Control in the *modern* plant is compact, centralized G-E Cabinetrol. It's attractive in design, safe to operate, and it costs no more!

Cabinetrol saves installation time and expense because it's a single, self-supporting unit. No cumbersome frames—no cluttered walls. Just one attractive, all-metal unit that will greatly enhance the appearance of your mill.

The savings in installation cost that you get with Cabinetrol usually far outweigh its higher original cost. Only two operations are necessary—placing the unit in the designated location and connecting external power, motor, and control leads.

IT'S PRE-ENGINEERED

Cabinetrol is based on the use of standard enclosures equipped with the right combination of standard control devices. Each unit is pre-engineered to meet your specific requirements. All starters and accessory equipment necessary to your application are incorporated in the Cabinetrol unit before it is shipped.

PROTECTS YOUR OPERATORS

Because metal-enclosed Cabinetrol is completely deadfront, it offers your operators and servicemen maximum protection. Each motor control is installed in an individual sheet-steel compartment with an interlocking door. Operating mechanisms for motor-circuit switches and air circuit-breakers are available from the front of the panel.

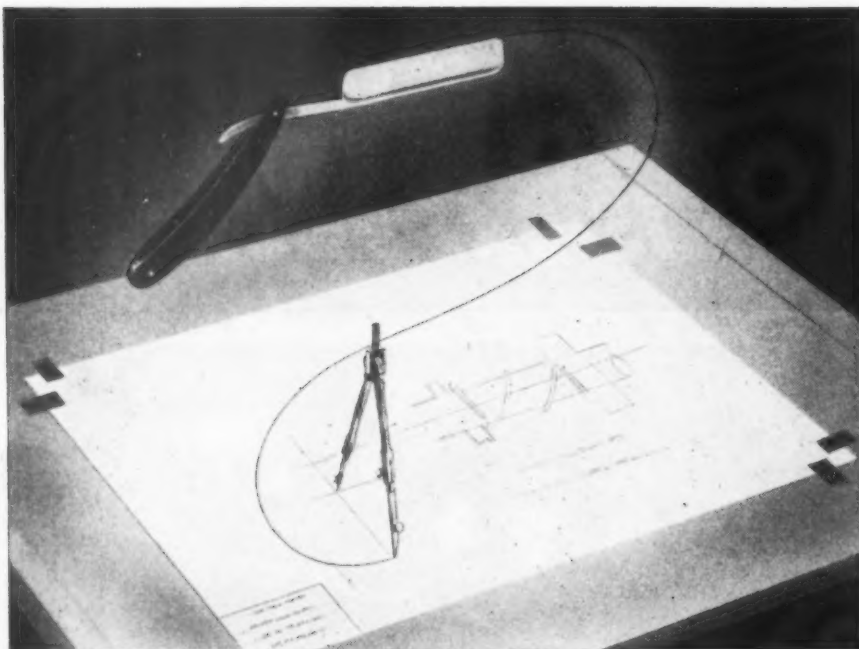
LET US HELP YOU equip your plant with co-ordinated control. We'll be glad to work with you now—to provide a Cabinetrol system specially engineered for your plant—and, if you desire, to help you fit Cabinetrol into your over-all plans.

If you'd like more facts about Cabinetrol ask for Bulletin GEA-3856. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

G-E INDUSTRIAL CONTROL

GENERAL ELECTRIC

675-314-3000



RAZOR-EDGE sharpness for your drawings

Lines that are clear and razor-sharp are standard practice when you draw on Arkwright Tracing Cloths. A special "finish" makes pen or pencil work clean and accurate, and you can re-ink over an erasure time and again without feathering.

Arkwright Tracing Cloths are the choice of experienced draughtsmen because of their high, permanent

transparency that gives life-long protection to important drawings. No specks, stains or pinholes to mar your work. No tearing or fraying from age and rough handling.

See for yourself what a difference there is! A note today will bring free samples. Write the Arkwright Finishing Company, Providence, Rhode Island.

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*Sold by leading
drawing material
dealers everywhere*
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Arkwright

TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 20 YEARS

(Continued from page 204)

ride, hot sulfuric acid, hot nitric acid and boiling solutions of sodium hydroxide do not affect the polymer."

Subjected to a temperature of 572 deg. F. continuously for three months in a recent test, it showed virtually no degradation, he reported. The plastic retained all its useful properties at that elevated temperature. Conversely, it is not adversely affected by temperatures as low as 75 deg. F. below zero.

Because its dielectric loss factor is extremely low, even at frequencies up to 3,000 megacycles, it is an excellent insulating material for currents of ultra high frequency. It does not dissipate the electric power as do most organic insulators when subjected to high frequencies, he said.

A water-absorption rate so low as to be rated "zero," high impact strength, and toughness are among its other properties.

★ ★ ★

TRANSPARENT FUSE TESTER AND PULLER

Housings for fuse pullers and testers made by the Star Fuse Company of New York City, are molded of transparent Tenite plastic, affording insulation



Plastic housing remains comfortable to bare hands in heat and cold

against shock and permitting handling without the use of bulky gloves. Since the plastic is low in heat conductivity, the housing remains comfortable to bare hands in heat and cold. Inside one of the handles of this tool is a small neon light, the glow of which is visible through the Tenite when a proper connection is tested. The plastic provides a tough housing, and is said to provide ample protection for the working parts.

★ ★ ★

COATED ABRASIVES IN PLASTICS INDUSTRY

"Coated Abrasives In the Plastics Industry" is the title of a new Behr-Manning service booklet termed "the first publication on plastics from the "sanding" angle." In addition to explaining abrasive selection, machinery and equipment, buffing, polishing, etc., the entire first half

(Continued on page 210)

OTIS ELEVATOR COMPANY

Tells Independent Investigator

*Phillips Screws Licked
3 Serious Problems...*

The investigator, from James O. Peck Co., industrial research authorities, is studying assembly methods in leading plants. At Otis Elevator Co. he asked the same questions you would ask - and here are some of the money-saving reasons they gave him for using Phillips Screws.



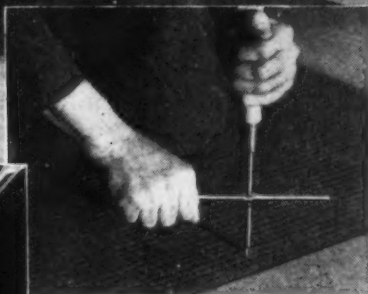
"THEY BANISHED BURRS - always a hazard in equipment used by the public. Slotted screws burred easily, and if unnoticed in assembly, might later scratch limbs or snag clothing, especially on a moving escalator, with resulting damage claims. If the burr was noticed, the screw had to be replaced, wasting time.

"THEY DISCOURAGED TAMPERING. When slotted screws were used, people could turn them out with a coin, a nail file, or even with finger nails. This malicious mischief is a constant 'headache' in buildings used by the public. Phillips Screws are relatively tamper-proof.

"THEY ENDED DRIVER SKIDS. Plates and panels scarred by slipping drivers are a serious problem to us, since our products are assembled in the field. Refinishing by expert touchup men comes high. Sometimes new parts must be procured from the plant, and the cost of time lost in installation mounts fast. The Phillips driver stays in the recess, doesn't skid."

His complete, idea-crammed report, with others now ready, and more to come, comprise a practical manual of modern assembly practice - a guide to savings you can't afford to miss. All types of products are covered - metal, plastic, wood. The coupon will bring the reports ready now and the rest as they are issued.

Whatever You Make, There Are Savings Suggestions for You in These Reports. They Are FREE . . . Mail the Coupon Today!



"SLOTTED HEADS COULDN'T TAKE the 'oomph' we use when we set 'em up, sometimes with a cross bar on the driver, without breaking or burring. Phillips Screws can - they start easier, drive easier, too."

"PHILLIPS SCREWS ADD GOOD LOOKS to safety," said Otis engineers. "The ornamental recess blends with the modern, finished appearance of the escalators - saves us getting the special head designs we formerly used."

PHILLIPS *Recessed Head* SCREWS

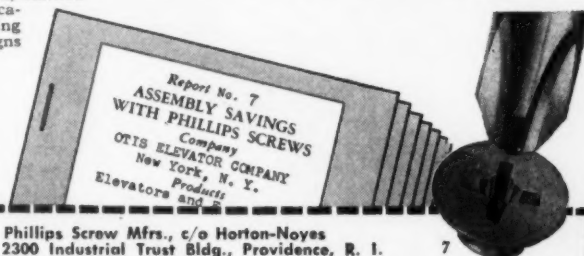
Wood Screws • Machine Screws • Self-tapping Screws • Stove Bolts

American Screw Co.
Atlantic Screw Works
Atlas Bolt & Screw Co.
Central Screw Co.
Chandler Products Corp.
Continental Screw Co.
Corbin Screw Div. of
American Hdwe. Corp.
The H. M. Harper Co.
International Screw Co.
Lamson & Sessions Co.

26 SOURCES

Manufacturers Screw Products
Milford Rivet and Machine Co.
National Lock Co.
National Screw & Mfg. Co.
New England Screw Co.
Parker-Kalon Corporation

Pawtucket Screw Co.
Pheoff Manufacturing Co.
Reading Screw Co.
Russell Burdall & Ward
Bolt & Nut Co.
Scovill Manufacturing Co.
Shakeproof Inc.
The Southington Hardware Mfg. Co.
The Steel Company of Canada, Ltd.
Sterling Bolt Co.
Wolverine Bolt Company



Phillips Screw Mfrs., c/o Horton-Noyes
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Send me reports on Assembly Savings with Phillips Screws.

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CRUCIBLE WAREHOUSE STOCK BOOK

Immediate Shipment from
Large Stocks

Lists Crucible's **FULL-RANGE**
of specialty steels —

**HIGH SPEED • ALLOY • STAINLESS
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all obtainable promptly from
Crucible's 26 warehouses.

The **CRUCIBLE WAREHOUSE STOCK BOOK** contains:

Working instructions, tables, and other reference material that will be helpful in specifying, fabricating, and heat-treating quality steels.

Crucible's **FULL-RANGE** stocks of specialty steels under these groupings . . .

Rexalloy Cast Cutting Tools
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Alloy Steels
Machinery Steels
Drill Steels
Miscellaneous Steels

CRUCIBLE STEEL COMPANY

of America



3 advantages of ordering all of your specialty steels from Crucible's FULL-RANGE warehouse stocks.

**Will simplify and centralize your steel buying...
reduce inventory...save time and money.**

1 CONVENIENCE AND TIME SAVING

No additional orders or 'phone calls to other suppliers—only one handling in the Receiving Department—less paper work in checking and paying the bill.

Crucible's FULL-RANGE warehouse service may make it possible for you to carry a lower steel inventory.

2 QUALITY AND UNIFORMITY

Crucible relies on its *own mills* for direct stock replenishment. It operates its *own* warehouse distribution system in conjunction with its manufacturing program. Thus, Crucible customers are assured that each lot received is of uniform top quality—will give a maximum of production efficiency.

3 SERVICE ENGINEERS AVAILABLE

In Crucible's Advisory Service at each warehouse you have available the services of trained, experienced, practical steel men who will cooperate with you in the selection and application of the best steels for every production purpose. In addition, mill metallurgists are available for consultation.

The Crucible steel man at the warehouse near you can help you select not only the right production steel but also the right cutting or die steel for use in fabricating your particular product.

The men who make Crucible steels know what each type is best for.

We'll be glad to send you a CRUCIBLE WAREHOUSE STOCK BOOK which lists the FULL-RANGE specialty steel stocks available at the 26 Crucible warehouses. It contains helpful reference data, and describes in detail the full Crucible service facilities available to you.

The Coupon, clipped to your company letterhead, will bring your free copy.



★ Crucible's Branch Warehouses and Sales Offices

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Kindly send me a copy of the CRUCIBLE WAREHOUSE STOCK BOOK:

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PROMPT DELIVERIES NOW!

Despite the tremendous demand for "Duet" we are finally caught up due to further production expansion. Thanks for your past forbearance.



Absorbs and Washes

**LIKE A
SPONGE**



**Used WET,
DAMP or DRY**

NO OTHER CLOTH LIKE IT!

Cleans, Dries and Polishes

**LIKE A
CHAMOIS**

Owing to **AMAZING** AMOUNT of WATER it HOLDS, "DUET" can be used as a Sponge . . . or wrung out tightly, like a Chamois.

Ideal for **HEAVY DUTY** work in industry. **CANNOT UNRAVEL.** Each thread locked by a hidden stitch. **EXTRA DENSE**, long-wearing surface. **SAVES MONEY.** Used dry its dense surface picks up dust like a magnet.

ANOTHER PRODUCT OF
AMERICAN SPONGE & CHAMOIS CO., Inc.
49 ANN STREET, NEW YORK 7
245 MISSION STREET, SAN FRANCISCO 5
Producers of
AMSCO CHAMOIS and MERMAID SPONGES
EST. 1869 DEMAND BY BRAND

(Continued from page 206)

of the booklet is devoted to an introduction and simplification of the plastics themselves. This introductory section clarifies much of the confusion resulting from the hundreds of plastics named by combining similar materials into seven, easily recognized family groups. Accompanying the booklet is a large 17" x 22" three-color chart enlarged from the center spread of the booklet and listing complete reference data on 70 of the popular rigid type plastics.

Copy of booklet may be procured from Educational Service Department, Behr-Manning Corporation, Troy, New York.

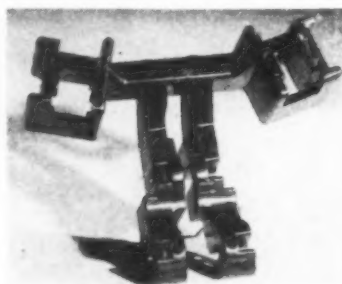
HOSE FOR FIRE FIGHTING FIRE WITH FOG

Announcement of new hose, small in diameter and light in weight and designed to withstand 800 lbs. working pressure, for fighting fire with artificial fog, is announced by United States Rubber Company, New York. The fog method is said to put out many fires more efficiently than a solid stream of water and to cause less water damage. Firemen are also protected by the fog.

PLASTIC DESIGN ELIMINATES USE OF INSERTS

New and unique design features for molded products are illustrated in three plastics parts for the new General Electric circuit breakers, molded by G-E Plastics Division, Pittsfield, Mass.

Molded in black phenolic material by the transfer molding process, the three parts included in the breaker assembly are the main base, contact arm and tripshaft. All three are designed to eliminate use of inserts and bring about a consequent reduction in cost.

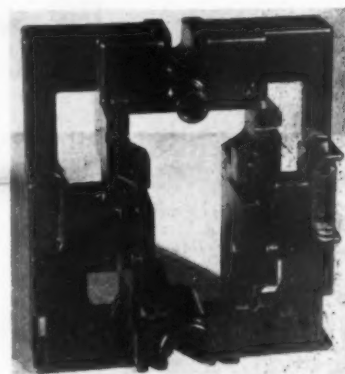


Molding accomplished without loose wedges or cross-pins

Although many intricate designs are incorporated in each part, G-E plastics engineers state that the molding was accomplished without loose wedges or cross-pins in the mold. This is particularly noteworthy, they said, in that numerous cross-holds and small projections are included.

The cross-holes themselves required no drilling or machining. They are the result of two slots originating from opposite directions with the plunger and cavity members passing to form the hole perpendicular to the direction of molding.

Still another interesting feature is the incorporation of six internal projections 1/16 inch thick in each of two square holes approximately 1/2 inch on a side. These are integral parts of the molding and allow the locking of metal pieces in



The units were designed to eliminate use of inserts

the tripshaft. Other projections illustrating difficult molding procedure are external bosses 1/8 inch thick and an inch long.

In addition, the molded base has side openings and bearing supports.

ELASTIC NYLON IS NEW LABORATORY DEVELOPMENT

Elastic nylon, newest addition to the growing family of polyamides has been made on an experimental scale by chemists of E. I. du Pont de Nemours & Co., it was announced at meeting of the American Chemical Society, Atlantic City.

Textile fibers made of certain of these new nylons, technically known as N-substituted polyamides, have elastic properties approaching those of rubber, said Dr. Emerson L. Wittbecker of the Du Pont Rayon Department.

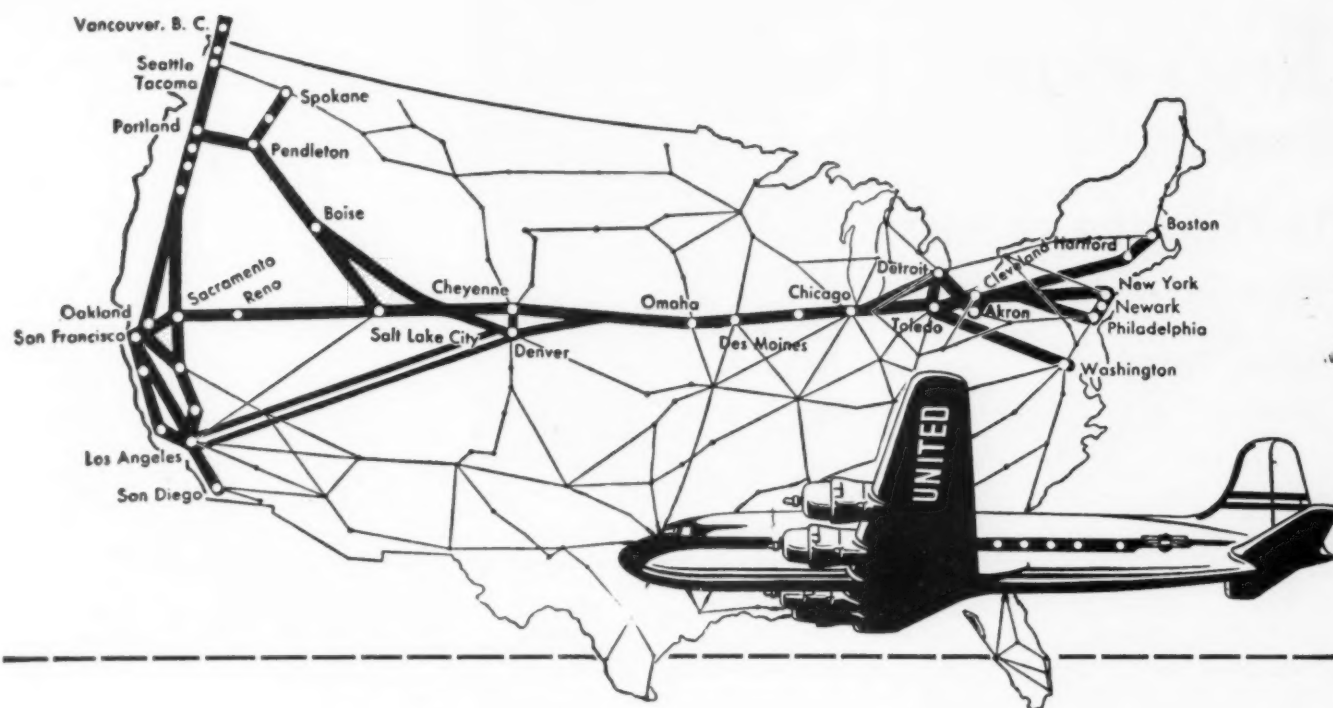
The elastic properties of the N-substituted polyamides, he pointed out, can be varied over a rather wide range, depending upon the molecular structure of the compound. One type that Dr. Wittbecker referred to as isobutyl 610, can be stretched 250-400 percent, in comparison with 600-1100 percent for rubber. The elastic recovery of this nylon was of the order of 95-99 percent, in comparison with 100 percent for rubber. Nylon yarn of the type now used in hosiery, which Dr. Wittbecker said was the highest combination of strength and elasticity of any fiber now in commercial use, has an elongation of only 15-25 percent.

The elastic modulus of the N-substituted polyamides—that is, the force required to stretch it 100 percent—is about twenty times that of a corresponding rubber fiber, while the tensile strength of the elastic nylon is about five times as great.

Dr. Wittbecker emphasizes that the new N-substituted polyamides represent only a laboratory development, stating that none of the materials is now commercially available, or will be for some time to come "if at all."

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Be Sure You Specify —*

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to convert a regular type into a plug type valve...

**SEATS AND DISCS
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Just insert a plug type seat and disc in place of the regular type, and you change an entire Bronze "Renewo" Valve from regular to plug type—providing all the extra advantages of this type, including its ability to stand up under hard service. No other change is necessary. The plug type seat-and-disc combination is made to fit perfectly into a regular type valve of corresponding size and pattern. And you have this same interchangeability in Iron Body "Ferrenewo" Valves. You don't have to buy an entire new valve . . . you don't even have to take the valve out of the line.

*Lunkenheimer interchangeability goes still farther. All parts of 200 lb. "Renewo" and 150 lb. "Ferrenewo" Valves (except bodies and bonnet rings) are quickly, easily, perfectly interchangeable. Fewer parts are needed; ordering and handling are simplified; repairs are facilitated. You save time, labor, money.

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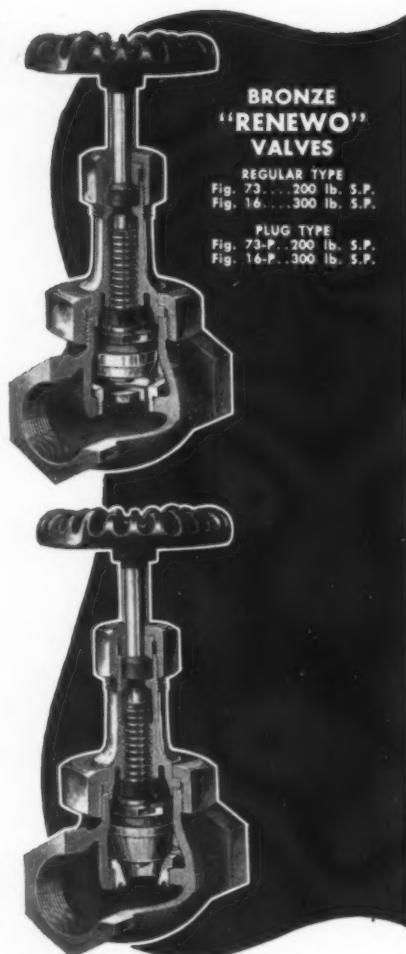
LET YOUR LUNKENHEIMER DISTRIBUTOR DEMONSTRATE . . .

Your nearby Lunkenheimer Distributor will welcome the opportunity to show you actual samples and demonstrate the interchangeability of parts in "RENEWO" and "FERRENEWO" Valves. You'll find it a big factor in increasing efficiency, lowering costs.



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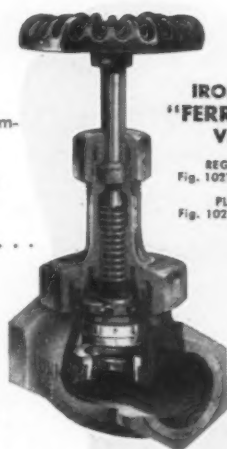
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BRONZE "RENEWO" VALVES

REGULAR TYPE
Fig. 73 . . . 200 lb. S.P.
Fig. 16 . . . 300 lb. S.P.

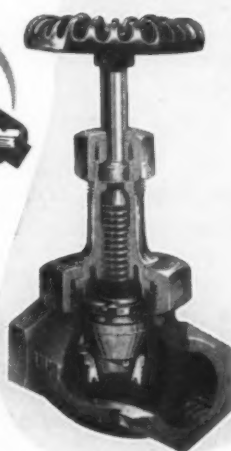
PLUG TYPE
Fig. 73-P . . . 200 lb. S.P.
Fig. 16-P . . . 300 lb. S.P.



IRON BODY "FERRENEWO" VALVES

REGULAR TYPE
Fig. 1021 . . . 150 lb. S.P.

PLUG TYPE
Fig. 1021-P . . . 150 lb. S.P.



ISSUE BOOKLET ON CEMENTING AND ASSEMBLY OF PLASTICS

Advance copies of the fifth chapter of its Technical Handbook, entitled "Cementing and Assembly of Plastics" is announced by the Society of the Plastics Industry, 295 Madison Ave., New York, N. Y. It is devoted to the basic processes of joining and bonding plastics pieces. The first part covers mechanical assembly by such means as rivets and bolts, screws and inserts; the second, the cementing of thermoplastics; and the third, the cementing of thermosetting plastics.

Only a limited printing of advance copies will be made and there will be a nominal charge for them.

1 1 1

TO PREVENT FROZEN TRACK SWITCHES NEXT WINTER

Frozen track switches cause many a winter headache for maintenance men of railroads, street railway companies and industrial yards, but the Cleveland Railway Company, Cleveland, Ohio, believes that its engineers have found an economical solution for this problem, reports the A. M. Byers Company.

A de-icing or ice-prevention unit, comprised mainly of wrought iron pipe and an electrical heating element, is the



Entire unit runs parallel to the full length of switch, buried about a foot deep

remedy devised by the street railway company's electrical engineers to prevent switches from becoming inoperative because of freezing.

About 100 such units have been installed to date at various locations on the transit system's lines in Cleveland. Reports indicate that they have operated successfully during the past season's winter weather and prevented traffic delays that usually result from non-functioning switches.

The heating element, designed for 2000 watts, 600 volts, uses the same power that is used to operate the transit system. It is encased in a 1½" wrought iron pipe 8' 10" in length. Wrought iron was selected as the pipe material because of corrosive conditions encountered, especially from salt which is frequently used by the city to clear streets of ice and snow.

One end of the pipe is equipped with a 2½" wrought iron collar that fits, with 1/16" clearance, into a three-foot long junction box and is held in place by set screws. The box has a removable cover plate flush with the street pavement.

(Continued on page 214)

If they awarded "Oscars" to Instruments



U.S. INSTRUMENTS Tell The Truth

UNITED STATES GAUGE

**BETTER INSIDE . . . BETTER OUTSIDE
. BETTER ON THE FACE OF IT**

Among the instruments which rate more than a nod of approval is the new U. S. G. Supergauge. There's a special kind of precision in its new movement, a stout resistance to excessive vibration and pulsation. The Supergauge is a masterpiece of color and form . . . easy to read, easy to look at. It will do wonders for your product . . . and for safe, accurate, economical process control . . . at a surprisingly competitive price.

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Manufacturers of Pressure, Temperature, Flow and Electrical Measuring Instruments



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A feature of Trumbull Service to those who specify and buy Electrical Control Apparatus, consists of informative circulars giving illustrations, descriptions, applications, extent of line, dimensions, etc. of all major lines. The following are of special interest to Industrial buyers—order by number.

Nos.
 300 Type "A" (Style "RBA") Heavy Duty Industrial Switches
 302 Type "A" (Style "A") Heavy Duty Industrial Switches
 307 Type "C" Medium Duty Industrial Switches
 314 Type "AT" Enclosed Circuit Breakers
 315 Switches in special enclosures (for special applications)
 333 Industrial Multi-Breakers
 308 "TM" Manual Motor Starters (Max. 7½ H.P., 550 V. AC)
 317 "TT" Manual Motor Starters (Max. 1 H.P., 250 V.)
 322 "CM" Magnetic Motor Starters (Max. 50 H.P., 550 V. AC)
 330 Combination Magnetic Starters (starter and motor circuit disconnect in same cabinet)
 338 Motor Control Centers
 408 Enclosed Bus Bar Distribution Systems
 305 Swing-Wa Panelboards
 306 Converti-Fuse Panelboards
 309 Multi-Breaker Panelboards
 321 Circuit Breaker Panelboards
 324 Swing-Wa Dead Front Switchboards

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Whether you are looking for a certain machine tool at a price, a special kind of a machine for a special job, or whether one of your present machines needs rebuilding or modernizing—make but one call to Botwinik Brothers of Mass., Inc.

WE STOCK HUNDREDS OF QUALITY MACHINE TOOLS LIKE THESE

1—Lees-Bradner Model LT Thread Mill. Machine, M.D., 6" x 72", 1943 latest type, sw. over bed 18", over carr. 6", capac. thru work spins. 3", rated capac's. in steel 1" C.P.

1—Milwaukee Model 2K Pl. Miller, M.D., dbl. overarm type, AC motor in base, tbl.

wkg. surf. 56" x 12", range: 28" x 10" x 17", very latest type.

1—Cin. Bick. 7' 15" col., motor on arm, Super Service Pl. Radial Drill, max. dist. spin. to base 78", 18 feed changes, 36 spin. speeds, Morse Taper No. 5, AC elect. equip.

Botwinik Brothers of Mass., Inc.

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Name

Address

(Continued from page 212)

ment. The opposite end of the pipe is capped and fitted with a terminal for grounding the heating element to the rail.

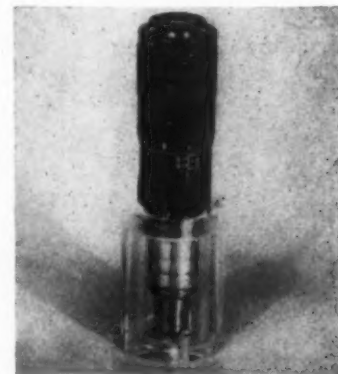
The entire unit runs parallel to the full length of the switch, buried about a foot deep. Operating somewhat on the principle of radiant heat, the de-icer, or anti-icer, warms the area surrounding the switch so that snow is melted as it falls on the warm pavement, residual water is evaporated and ice is prevented from forming.

The heaters are controlled by a switch located in a box set high on an adjacent line pole. During bad weather, the units are turned on and left in continuous operation. When prolonged periods of mild weather are indicated, the heaters are turned off. It requires approximately four hours to make the switches "ice-proof" after the heaters are put into operation from a cold start, according to the transit system engineers.

♦ ♦ ♦

DEVICE FOR GAUGING PLASTICS AND GLASS

Micrometer for measuring thickness of large sheets of transparent plastics or glass, for determining the thickness of central portions of sheets in positions



Measures plastics, glass and curved
surfaces accurately and speedily

inaccessible to the ordinary micrometer, and for measuring transparent curved surfaces, has been developed by the Aircon Manufacturing Corp., 166 W. Olive St., Burbank, California. Scaled to .001 inch, it operates on two scales—from 0.0 to 0.4 inch and from 0.4 to 1.5 inches. Accurate readings are said to be obtained speedily and directly. Descriptive literature available.

♦ ♦ ♦

NEW MULTIPLE V-BELT DRIVE BOOKLET

"How The Dominant Drive Speeds Production, Reduces Costs" is the title of a 16-page, illustrated booklet recently published by the Multiple V-Belt Drive Association. Written for laymen, the booklet does not go into engineering details of the Multiple V-Belt Drive. Instead, it presents the results of these

(Continued on page 216)

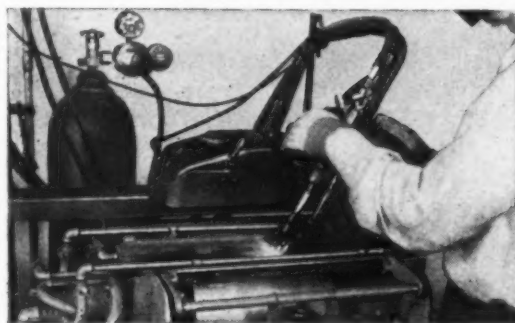
Lower Fabrication Costs with MECHANIZED OXY-ACETYLENE WELDING



Hot water heater fabricated by mechanized oxy-acetylene welding.



Welding the heater base. Two 15-in.-diameter flange-edged pieces are joined in less than a minute.



Welding the fuel tank of the heater. The 11 in. seam is welded in approximately one-half minute.



Welding a dished head to the fuel tank. The operation is completed in less than half a minute.

These pictures show some of the steps in the assembly of an immersion type hot water heater — just one of the many jobs that are "naturals" for mechanized oxy-acetylene welding. Initial equipment investment to do this work is low. Installation is simple and inexpensive. Maintenance costs are negligible. The smoothness of the welds produced by mechanized oxy-acetylene welding on this job completely eliminated the need for finish grinding. The speed of welding, 25 in. per min. on these 16-gage steel parts, provides for high production. Rejects are practically zero.

Use of mechanized oxy-acetylene welding helps to reduce costs, improve product quality, and increase production. Ask a Linde representative to show you how you can use this method in your shop.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

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SOCKET
HEAD
CAP
SCREW

COLD FORGED HOLO-KROME

fibro forged

INTERNAL  **SOCKET SCREWS**
WRENCHING

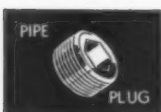
GUARANTEED
Unfailing PERFORMANCE



SET



CAP



PIPE
PLUG



STRIPPER
BOLT



KEYS

THE HOLO-KROME SCREW CORP. • HARTFORD 10, CONN.

(Continued from Page 214)

engineering features in terms of operating advantages to drive users. These advantages are covered in separate chapters on "Delivered Horsepower," "Drive Durability," "Adaptability to Fluctuating Production Schedules," "Savings in Man-Hours and Shop Space," and "Economy of Installation and Maintenance." The booklet is of special value to executives and foremen responsible for efficient and economical plant operation. It is available on request, without charge, from the national headquarters of the Multiple V-Belt Drive Association, 22 West Monroe Street, Chicago 3, Illinois.

1 1 1

G-E BUILDS SPECIAL NARROW GAGE DIESEL-ELECTRICS

The General Electric Company is completing the last of five special 65-ton, 400-hp, 36-inch gage industrial diesel-electric locomotives for the Carnegie-Illinois Steel Corp. These are the largest special narrow gage locomotives ever built by General Electric.

Operating on some 40 miles of 36-inch gage tracks at the South Works Plant, features requiring special construction on these locomotives are narrow gage track, limited clearances, and sharp curves. These locomotives will be used on 24 hour per day service in general switch-



GE-built 65-ton Diesel-electric locomotive for Carnegie-Illinois Steel Corporation

ing around the open hearth furnaces, hauling charge cars and hot ingot cars. Longest trains will consist of 26 ingot-carrying, roller-bearing cars with greatest travel distance about one mile. Maximum trailing train weight to be hauled will be about 1400 tons on level track, and 535 tons on 1.5 percent grades.

Geared for a top speed of 25 miles per hour and equipped with two 2-axle trucks of articulated design suitable for operation on 50 foot radius curves, each locomotive is powered by two Cummins HBIS-600 diesel engines, nominal rating 200-hp at 1800 rpm. A special feature of the locomotives, making them eminently suitable for operation on curved tracks in this plant, is the articulated truck design.

1 1 1

PORTABLE FURNACE FOR PRE-HEATING MAGNESIUM SHEETS

How the installation of a compact, portable furnace eliminated a complicated arrangement for the preheating of magnesium sheets was recently demonstrated

(Continued on page 220)



how much does

a decision cost?

Perhaps it's just a penny postal card, a three-cent stamp, or the cost of a phone call. By whatever means you seek it, the cost of a decision is usually small when you're dealing with Weirton. The main reason is that the cost of delays in securing decisions is eliminated.

At Weirton, all the men who may be needed for decisions on customer problems—whether on prices, quantities, metallurgy, deliveries or other matters—are always within quick reach of one another. For Weirton's operations are integrated: sales, laboratory, production, shipping—all departments are "under one roof" to cut down delays when customers need quick action.

That's why it is easier for customers to get the right steel plus quick, economical service from Weirton . . . why dealing with Weirton frequently pays extra dividends to steel buyers.



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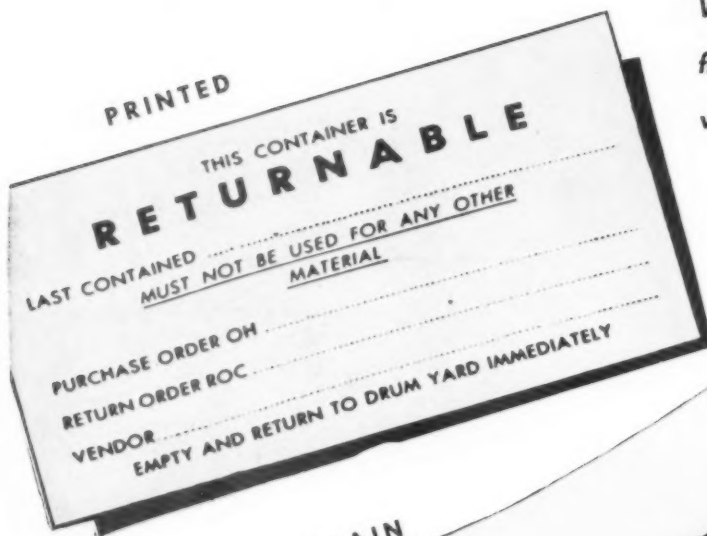
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Filmonize
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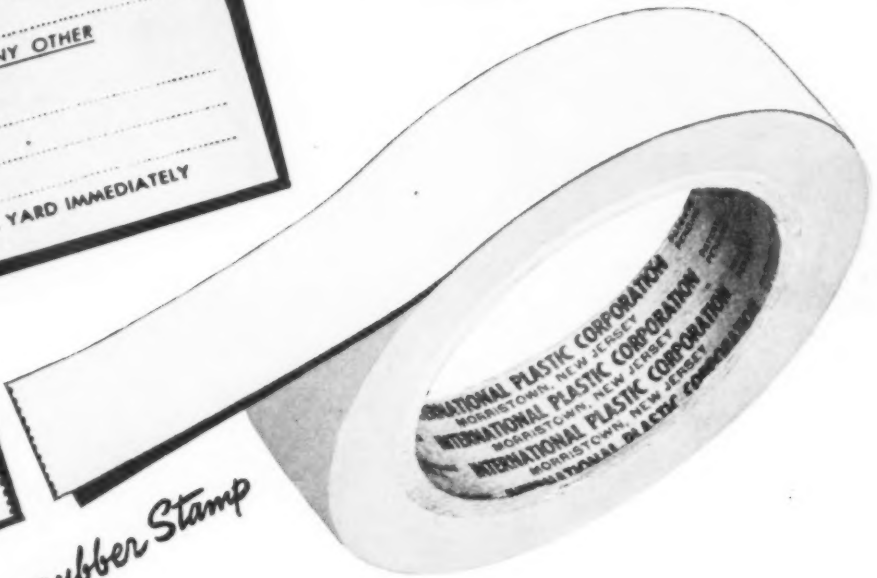


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with pencil, crayon, rubber Stamp

We print your label on **SCRIPTON**—you make your fill-ins with pencil, crayon or rubber stamp. Or—you write or rubber-stamp individual labels as needed.



With **SCRIPTON** — printed or plain — you now get clear, readable, self-sealing labels that stick instantly. (Use no water or hot iron — just press on.) The tape itself has top tensile strength. The new-type adhesive is effective from 150° to -20° Fahrenheit and withstands sudden temperature changes.

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You have a great many time- and labor-saving uses for **SCRIPTON**. Get in touch with your wholesaler today — or write us — for suggestions and full details.

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SELF-SEALING TAPES

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Makers of all types of self-sealing industrial tapes—
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As final Victory draws nearer in the months to come and the emphasis on war production gradually swings over to production for peace, more and more Timken Tapered Roller Bearings will become available to more and more manufacturers.

And they will be better bearings than ever before, for they will have profited from such tests as no bearings previously have been called upon to undergo.

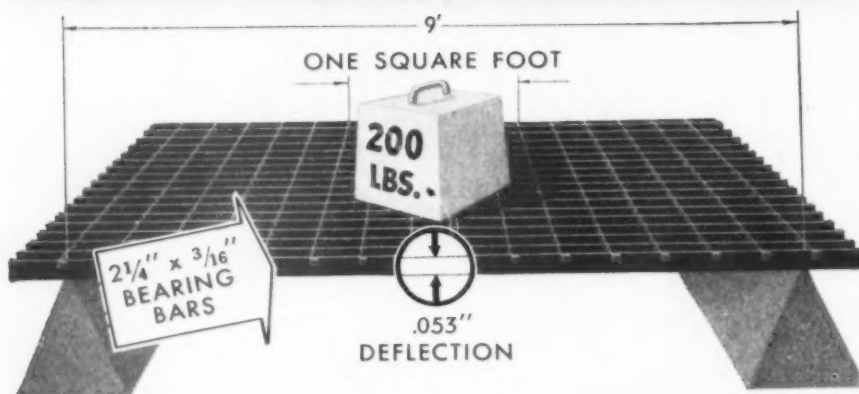
Engineers who know their bearings always have recognized the sterling qualities of Timken Bearings, and from this recognition have sprung world-wide acceptance and preference.

Never did the trade-mark "TIMKEN" mean as much to the bearing user as it does today. Make sure it is stamped on every tapered roller bearing you buy.

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TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

THE TIMKEN ROLLER BEARING
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This is TRI-LOK OPEN STEEL FLOORING



The locked in strength of TRI-LOK enables it to stand up under heavy loads—even on long spans. No rivets, bolts or welds are used in its construction, thus, the possibility of loose joints is eliminated. Write for Bulletin 1140.

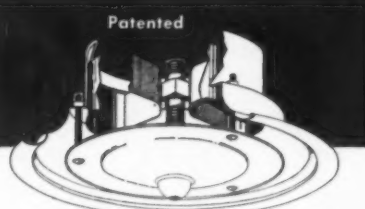
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Adjustable Air Diffusers



For better mixing of room and supply air, more uniform temperature throughout the occupied zone and noiseless air diffusion.

Whether they are used in heating, cooling, ventilating or combined systems, Kno-Draft Adjustable Air Diffusers can be adjusted quickly and accurately for system balancing and individual or seasonal requirements. By simply turning the air adjustment screws (easily accessible from under the unit) the inner cone may be raised or lowered to secure any angle of air direction required. The built-in

Any desired condition at your fingertips.

Kno-Draft Type K Adjustable Air Diffuser with Type D volume damper

(Damper regulator protected by
tamper proof cap)

volume damper varies the air outlet aperture uniformly without affecting the outlet velocity of diffusion pattern.

Free handbook: contains clear sketches, charts, dimension charts and instructive text that simplify the selection and installation of air diffusers. Please write Dept. P-17 for your copy, using your company letterhead.

W. B. CONNOR ENGINEERING CORP.

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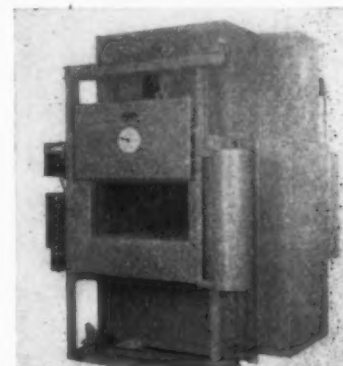


(Continued from page 216)

at the Consolidated Vultee Aircraft Company, Benbrook, Texas.

Operations at the Consolidated Vultee Aircraft Corporation required the preheating of magnesium sheets before pressing and forming. To do the required preheating, Despatch engineers designed a furnace of simple but effective design. Portability was one of the prime factors and the furnace was provided with large easy rolling casters so that the unit can be moved from one press brake to another as operations demanded.

By introducing heat into the furnace from the top and the bottom and with recirculating ducts on both side walls, uniformity of within plus or minus 5 degrees F. was obtained. This system allowed even heating of the sheet whether in a flat condition or in a partially formed



Vertical lift doors permit rapid handling of sheets to prevent cooling before forming

shape in event the entire forming operation could not be completed in one press operation.

Smooth, fast operating vertical lift doors at each end of the Despatch furnace permit rapid handling of the sheets in order to prevent cooling before forming. Doors are arranged so they seal up against the furnace body when in closed position keeping heat from the operator.

By having a fan of large capacity, over 40 air changes per minute are obtained in the furnace. This assures fast uniform preheating and increases production.

PATTERNED LUCITE ANNOUNCED BY DU PONT

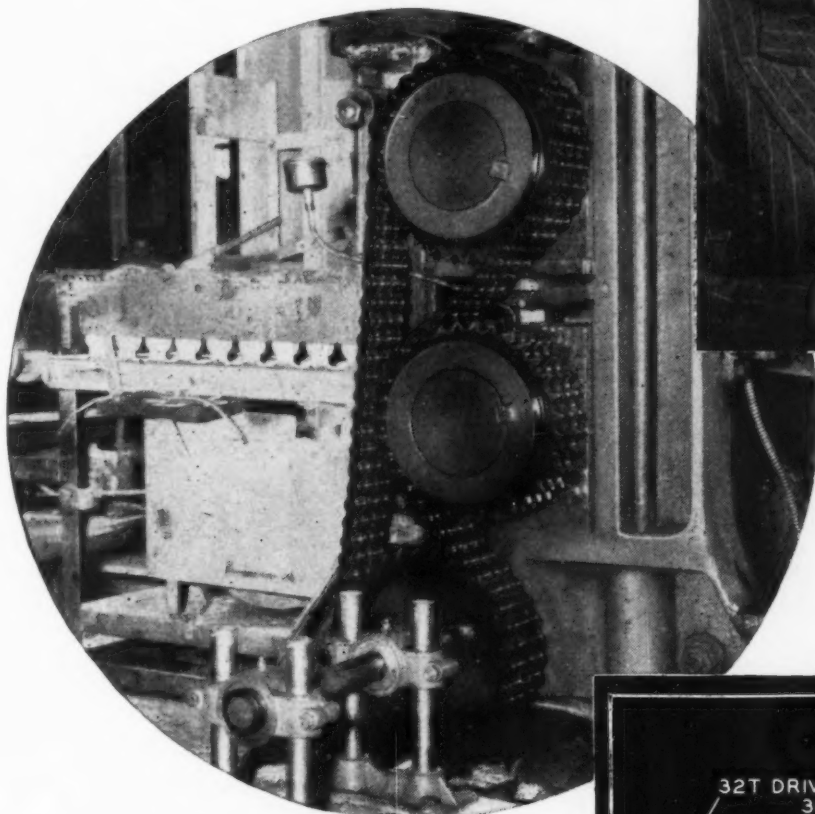
Reduction in the nation's glass breakage bill for public installations such as street-lamp globes, ticket windows and office partitions is foreseen in development of a process, announced by Du Pont, to produce shatter-resistant sheets of "Lucite" acrylic resin known as patterned Lucite, with surface patterns formed on them as they are made.

Patterned "Lucite" will be available at the outset in twelve standard designs, but innumerable other designs are possible. Lightweight, shatter-resistance, and variety of color are among the properties which adapt the material to such uses as office paneling, windows for airplanes and washrooms, decorative settings in night clubs, street-lamp globes, edge-lighted wall panels, and numerous novelties.

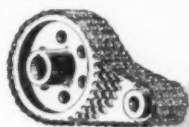
DO YOU KNOW ROLLER CHAIN . . .

is right for heavy loads!

① WITH ROLLER CHAINS, working loads are distributed over a large number of sprocket teeth. Thus each tooth carries its proportionate part of the heavy load imposed, assuring far greater load handling ability in less space.



③ AS THIS DRIVE DESIGN DIAGRAM indicates, Baldwin-Rex roller chains can be flexed in two directions . . . an indication of their versatility. They are easily installed and maintained, and do not need adjustable centers for effective operation. This drive has given years of satisfactory service. Operating and maintenance costs have been unusually low.



BALDWIN-REX

ROLLER CHAINS

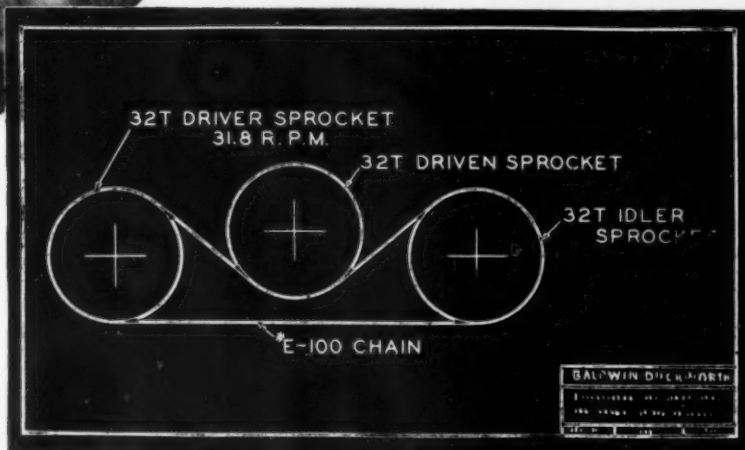
Write for competent information and assistance on your specific drive problems, or for catalogs on Baldwin-Rex roller chains.

BALDWIN-DUCKWORTH DIVISION OF CHAIN BELT COMPANY

366 Plainfield Street, Springfield 2, Massachusetts



② THIS CALENDER DRIVE is a typical example of the ability of Baldwin-Rex roller chain to handle heavy torsional loads without the tremendous bulk of other types of drives. The natural elasticity of the chain plus the oil film between the working parts cushions tremendous shock loads. They're built to stand up under the toughest service without slippage.



Among the ASSOCIATIONS

1946 - 1947 Officers of Purchasing Agents Association of Chicago—C. L. Otremba Named President



President
C. L. Otremba



1st Vice Pres.
W. A. Macnider



2nd Vice Pres.
W. B. Burnett



Treasurer
H. H. Wise



Secretary
L. R. Seen



Nat. Director
A. G. Pearson



E. A. Fandell



R. A. Doyle



J. F. Knight

New Members of Board of Governors

C. L. Otremba, Purchasing agent, Montgomery Ward & Company, Chicago, was elected president of the Purchasing Agents Association of Chicago, at the annual election of that body: Other officers are as follows:

First vice president, W. A. Macnider;
Second vice president, W. B. Burnet, Imperial Brass Mfg. Co.;
Treasurer, H. H. Wise, Scovill Manufacturing Co.;

Secretary, L. R. Seen, Borg & Beck, Division of Borg-Warner Corp.;

National director, A. G. Pearson, American Meat Institute.

The following new members of the Board of Governors were also elected:

E. A. Fandell, Northern Trust Company;

R. A. Doyle, Glidden Company;

J. F. Knight, University of Illinois.

DAVID M. MEEKER HEADS NEW YORK ASSOCIATION

David M. Meeker Purchasing Agent, Revlon Products Corporation, was elected president of the Purchasing Agents Association of New York at the annual meeting of that body held at Builders Exchange Club, New York City, on June 18th. Other new officers are as follows:

First vice president, Harold G. Butterfield, National Union Radio Corporation;

Second vice president, Donald G. Lyons, Johns-Manville Corporation;

Treasurer, Edward B. Fielis.

Member of executive committee, three-year term, Charles O. Minot, A. H. Bull & Co., and Howard M. Van Cleaf, Whit-



President D. M. Meeker,
New York Association

man Export & Import Company; two-year term, Albert J. Kelly, Standard Oil Company of New Jersey.

J. E. Leonard, 120 Broadway, New York, is executive secretary of the association.

President Meeker has been active in the affairs of the association for the past 15 years, recently serving two terms as vice president and as chairman of the program committee. Vice President Butterfield has been a member of the association since 1938. In addition to two years on the executive committee he has served as chairman of the attendance committee, new members committee, and during the past year he was second vice president and chairman of the forum committee. Vice President Don Lyons, who is one of four assistants to Director of Purchases Norman O. Aeby of the Johns-Manville Company, has taught purchasing course at the New York Business Institute, a division of the Y. M. C. A. Schools, and lectured on purchasing at Polytechnic Institute and Pratt Institute in Brooklyn, N. Y. He is chairman of the association's educational Committee. Treasurer Edward B. Fielis has been association treasurer for the past 24 years, being first elected to the job in 1922.

(Continued on page 224)



Philco "Thirty" Industrial Truck Storage Battery gives 30% longer life and is identified by its distinctive red connectors.

FOR 50 YEARS A LEADER IN INDUSTRIAL
STORAGE BATTERY DEVELOPMENT

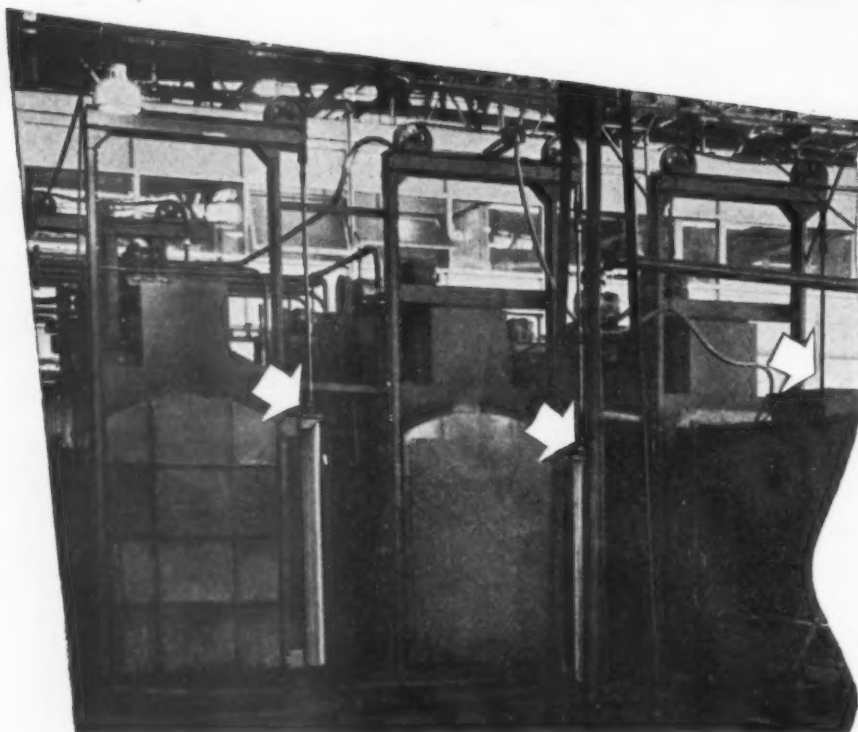
PHILCO CORPORATION • STORAGE BATTERY
DIVISION • TRENTON 7, NEW JERSEY

**MODERN ELECTRIC INDUSTRIAL
TRUCKS POWERED BY COST-
SAVING PHILCO "THIRTY"
STORAGE BATTERIES**

Now you can get the kind of industrial trucks experience has proved the safest, most flexible and maintenance-free—ELECTRIC TRUCKS! And you can power your trucks with the greatest materials handling development since the fork-lift truck, itself—PHILCO "THIRTY", the Storage Battery with 30% longer life! Plan now for the big demands increasing production will place on your materials handling equipment. Philco "Thirty" will give your trucks top capacity, *plus* savings in maintenance, depreciation and replacements. Write today for new catalogs giving specifications.

PHILCO

*Famous for Quality
the World Over*



BELL AIRCRAFT Uses — CURTIS Air Cylinders to Operate Furnace Doors

At the Wheatfield plant, Niagara Falls Airport, N. Y., of Bell Aircraft Corp., Curtis Air Cylinders are used to open and close doors of heat-treating furnaces.

This is only one of hundreds of lifting, pulling or pushing operations that can be handled quickly, easily and economically with Curtis equipment.

The rugged construction and simple design of Curtis Air Cylinders has resulted in a record of unfailing service in many industries. Installation cost is small, operation is easy, power consumption low, using regular shop airlines.

Efficiency, low-maintenance expense and long, trouble-free life characterize every Curtis Compressor, Air Hoist and Air Cylinder installation.

For full information, write for form C-7.

CURTIS PNEUMATIC MACHINERY DIVISION

of Curtis Manufacturing Company

1908 Kienlen Avenue, St. Louis 20, Missouri

92 Years
of Successful
Manufacturing

CURTIS PNEUMATIC MACHINERY DIVISION

of Curtis Manufacturing Company
1908 Kienlen Avenue, St. Louis 20, Missouri

Please send me Form C-7 on Curtis Air Hoists and Air Cylinders; also Curtis Air Compressor.

Name.....

Firm.....

Street.....

City.....Zone.....State.....

G-491

New York Association

(Continued from page 222)

Speaker for the evening was Gene Flack, Director of Advertising and Trade Relations Counsel, Sunshine Biscuits, Inc., whose subject was "Shoot the Works". He also is president of the Sales Executives Club of New York.

F. Albert Hayes, recently named Director of Purchasing for the Bigelow Sanford Carpet Co., Inc., New York City, a former president of the National Association, and a member of the New England Association since 1928, has become a member of the New York Association.

♦ ♦ ♦

R. W. HUDSON HEADS OKLAHOMA ASSOCIATION

R. W. Hudson, Robberson Steel Co., Oklahoma City, Okla., is the new president of the Purchasing Agents Association of Oklahoma City; Gene Aufricht, Oklahoma City Hardware Company is first vice president; Richard H. Lawrence, Sherman Machine & Iron Company, is second vice president; H. A. Krampert, American Body & Trailer Co., is secretary, and George W. Qualls of Oklahoma Gas & Electric continues as treasurer, Carl Wilson, Carpenter Paper Co., is national director.

♦ ♦ ♦

J. E. PARSONS NAMED PRESIDENT OF ST. LOUIS ASSOCIATION

J. F. Parsons, Monsanto Chemical Co., was elected president of the Purchasing Agents Association of St. Louis at the June 18 meeting of the association. Other officers elected are L. C. Gragg, Hussmann-Ligonier Co., first vice president; A. W. Soell, Gaylord Container Corp., second vice president; P. M. Green, Combustion Engineering Co., Heine Boiler Division, secretary; L. A. Dahlheimer, Emerson Electric Mfg. Co., treasurer; W. Bridwell, General Steel Castings, Corp., Wm. A. Oakley, Western Cart-ridge Co., and W. J. Wallace, Aluminum Ore Co., members of executive committee. A motion picture, "Fisherman's Paradise" was shown. On July 16, members of the association will enjoy a river-ride on the excursion liner S. S. Admiral.

♦ ♦ ♦

"SUBMARINE WARFARE" CONNECTICUT ASSOCIATION

"Submarine Warfare in the Pacific" was the subject of Commander W. T. Kinsella's address before the Purchasing Agents Association of Connecticut at their May 23d dinner-meeting, held at the Bristol Chippabee Country Club. Prior to the meeting, Wyman Randall, Rust Craft Publishers, Inc. of Boston, and Fred Space of Seymour Mfg. Co., spoke at the fifth session of the Purchasing course, subject, "Loyalty." The June meeting on June 28th, was dedicated to "Ladies Day," at Norwich Inn, Norwich, Conn. Golf and bridge featured the afternoon, followed by dinner and entertainment in the evening.

WHEN YOU NEED STEEL
— FOCUS ON THE
Symbol of Service



EVEN under present-day difficulties, you can depend upon us to do our best to fill your needs as completely and quickly as possible. Through our nine conveniently located warehouses, every effort is made to have available adequate, well-balanced stocks. And our engineers are ready to help you with any problem involving the selection, application and fabrication of steel. For these reasons steel users recognize this label as the *Symbol of Service*.

Whatever kind of steel you want—Hot Rolled or Cold Finished Bars, Structural Shapes, Plates, Sheets, Alloy Steel, Stainless Steel, Tools, Machinery, etc.—phone, wire or write our nearest warehouse. Your orders and inquiries will get courteous attention and prompt action.

LISTEN TO . . . the "Hour of Mystery" presented by United States Steel on the radio every Sunday evening. Consult your local newspaper for time and station.

UNITED STATES STEEL SUPPLY COMPANY

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| CHICAGO (90) | 1319 Wabansia Ave., P. O. Box MM | BRUNSWICK 2000 | NEWARK (1), N. J. | Foot of Bessemer St., P. O. Box 479 | Bigelow 3-5920 REctor 2-6560, BErgen 3-1614 |
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| BOSTON | 176 Lincoln St., (Allston 34), P. O. Box 42 | STadium 9400 | ST. LOUIS (3) | 21st & Gratiot St., P. O. Box 27 | MAIn 5235 |
| CLEVELAND (14) | 1394 East 39th St. | HEnderson 5750 | TWIN CITY | 2545 University Ave., St. Paul (4) Minn. | NEstor 2821 |
| MILWAUKEE (1) | 4027 West Scott St., P. O. Box 2045 | MITchell 7500 | | | |

UNITED STATES STEEL

*This
Jack-Of-All-Jobs
Saves Time
and Tempers!*

The Simplex Emergency Jack is the undisputed heavy-duty jack-of-all-jobs for plant-wide work. With ease and safety it lifts heavy loads vertically, pushes horizontally; tilts on its base to lift or push from any angle. Lifts on cap, on corrugated toe, on auxiliary cap shoe, or from any intermediate height by using the chain as a sling. Close quarter operation is provided by the double lever socket. Loads are prevented from slipping off, even when jacking at an angle, by the machine corrugated toe lift. Added safety is imparted by a larger base area and super-tough materials.

Sold by leading supply houses everywhere.



Simplex No. 310A, 15-tons capacity, height 22", lift 14", toe lift minimum 2 1/4".

Templeton, Kenly & Co.
Chicago (44.) Ill.
Better, Safer Jacks Since 1899

SIMPLEX
WORLD'S MOST
COMPLETE
LINE OF
JACKS
LEVER
SCREW
HYDRAULIC

WASHINGTON, D. C. INSTALLS NEW OFFICERS

New officers for the 1946-47 association year were installed at the June dinner meeting of the Purchasing Agents Association of Washington, D. C. at the Mayflower Hotel on June 11th, as follows: President, C. Irving Hansen, director of procurement, U. S. Maritime Commission; Vice president, A. W. Hawkins, purchasing agent, Potomac Electric Power Co., Secretary-Treasurer, A. W. Alexander, assistant general purchasing agent, Engineering & Research Corp., Riverdale, Md.; National Director, Clifton E. Mack, director of procurement, U. S. Treasury Department; and E. P. Scully, general purchasing agent, Engineering & Research Corp., alternate director. Board of Directors, Clifton E. Mack, E. P. Scully, and Roland M.



President C. Irving Hansen

Brennan, Purchasing Officer of the District of Columbia.

Committee chairman have been named as follows: Educational, E. P. Scully; Membership, Julius Kallins, Cafritz Co.; Public Relations, Roland M. Brennan; Program and Entertainment, G. C. Smith, American National Red Cross; Attendance, Kelly Pardoe, assistant purchasing agent, Capital Transit Co.

Announcement was made that Edward E. Cissel, purchasing agent, American Security & Trust Co., was elected secretary of the Bankers' Buying Group at the 31st annual convention of the N. A. P. A.

Grey Leslie, UNRRA, retiring president, and Clifton E. Mack were congratulated for their efforts on education and public relations.

The Monday evening classes in procurement case studies are proving popular, especially among members of the Women's Division of the local association.

INSPECT ST. REGIS MILLS CENTRAL NEW YORK

The making of Kraft paper, manufacture of multi-wall bags, and the production of bag-making and bag-filling machinery proved of practical interest to members of the Purchasing Agents Association of Central New York, some sixty of whom took advantage of the opportunity to visit the plants of the St. Regis Paper Company at Oswego, N. Y. on May 22nd, date of the association's spring meeting. Here they visited the Taggart bag factory, one of the largest plants of its kind in the world in which multiwall bags are manufactured; thence,

the St. Regis paper mill where thousands of tons of kraft paper are produced each week for use in making the bags; and then to the St. Regis machine shop where bag filling machines are designed and built.

Following the plants visitation, which was in charge of William Doherty, purchasing agent for the machine division, a business meeting was held in a local restaurant presided over by President Charles Patchin of the association. Here talks were made by John McDermott, manager of the paper mill; Theron A. Contryman, general manager of the Taggart bag plant; Neil E. Dorrington of the Machine division, and William Peterson, engineer in charge of machine production.

1 1 1

A. R. BRANE HEADS SPRINGFIELD ASSOCIATION

The following officers were installed at the June 12th meeting of the Purchasing Agents Association of Springfield, Ohio at the Shawnee hotel: President, A. R. Brane; Vice president, J. C. Laihr; Secretary, Carlos Stone; Treasurer, W. R. Rush; National director, I. E. Weadon; Local director, D. F. Korinke; Out-of-town director, Walter E. Moore. Following dinner, National Director Don Applegate reported on the N. A. P. A. convention held in Chicago the later part of May.

1 1 1

WM. J. YOUNG HEADS BALTIMORE ASSOCIATION

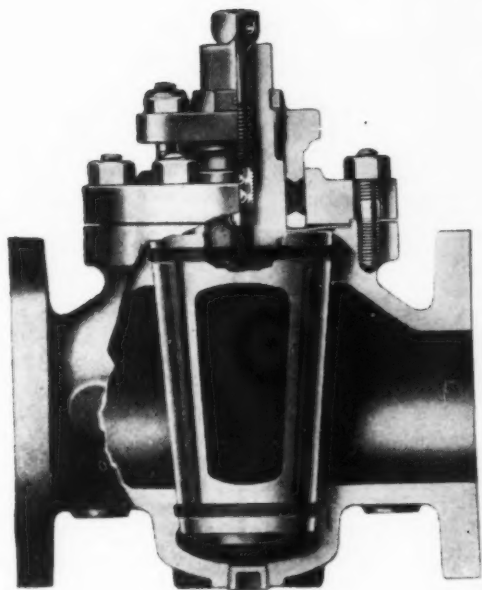
William J. Young, Baugh Chemical Co., was elected president of the Purchasing Agents Association of Baltimore, at the association's "Annual Fun Meeting" at the Lord Baltimore Hotel, June 19th. Other officers elected are: Vice president, Anthony J. Peroutka, Federal Reserve Bank; Treasurer, Andrew J. Keyes, Recreation Enterprises; Secretary, William N. Francis, Cary Machinery & Supply Co.; Board of Directors, John H. Crowther, H. E. Crook Co., Inc.; National Director, Lingrad I. Whiteford, Maryland Glass Corporation; Alternate national director, Alfred H. Schultz, Jr., Revere Copper & Brass, Inc. Delegates who attended the N. A. P. A. convention in Chicago reported on various of the activities.

1 1 1

HOW PURCHASING AGENTS VIEW ADVERTISING

"The Purchasing Agent Looks at Advertising" was the topic of an unusually interesting and informative panel discussion at the monthly dinner meeting of the Industrial Marketers of Detroit, held at the Wardell-Sheraton Hotel in that city, May 14th. The speakers were Truman H. Schneider of Bundy Tubing Co., Ray Mauer of Detroit Lubricator Co., Joseph McRobbie of American Blower Corporation, and Fred D. Sickelsteel of E-Cell-O Corporation. Stanley J. Smith, Western

(Continued on page 228)



WALWORTH

Lubricated

Plug Valves



for **TOUGH** assignments

For handling petroleum products, natural or manufactured gas, acids, alkalis, solvents, slimes, surries . . . in fact for almost any hard-to-handle liquids — there's a Walworth Lubricated Plug Valve designed for the job.

Easy to operate, tight sealing, resistant to wear and corrosion, Walworth Lubricated Plug Valves assure long years of dependable service at low operating cost.

Walworth Lubricated Plug Valves are available in sizes $\frac{1}{2}$ " to 24" for pressures from 125 to 5,000 psi., and for vacuum requirements. For full details — prices, sizes, dimensions, and other pertinent data, see your Walworth distributor or write for Walworth Catalog No. 44L.

Walworth Lubricated Plug Valves Offer These Advantages


- . . . Complete surrounding of ports with resistant lubricant affords positive seal against leakage.
- . . . Lubricant grooving system assures ease of operation — tight shut-off — greater protection against corrosion.
- . . . Body and plug fully protected by lubricant from attack by line fluids.
- . . . Quarter turn opens or closes valve.
- . . . Made in a complete range of sizes $\frac{1}{2}$ " to 24" and for pressures from 125 to 5,000 psi., and for vacuum requirements.

WALWORTH
valves and fittings

60 East 42nd Street, New York 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

AMES *Shockless*




Hundred Series

DIAL INDICATORS

For tough jobs, where hammer-like blows at the spindle end break down ordinary indicators, AMES Shockless Indicators stand up and give uninterrupted service. The addition of a simple shock-absorber to the wheel assembly protects the gear train without changing the outside dimensions or appearance. Unlike any other indicator cushioning device, it is absolutely effective, does not reduce accuracy or sensitivity and saves repair expense.

Try some of the various sizes and models on your most punishing testing jobs and see how they will keep on checking fractions of the thousandth inch just as accurately after being pounded and jolted severely.



B. C. AMES CO.
WALTHAM, MASS.

(Continued from page 226)

Manager of PURCHASING Magazine, introduced Stuart F. Heinritz, Editor, who served as moderator during the formal presentation and for a lively question and answer period which followed.

The speakers, taking the practical method of illustrating their remarks with dozens of current examples of publication and direct mail advertising copy which had impressed them as of outstanding merit or as falling short of what the purchasing agent expects in an advertising message, stressed the importance of factual information, good illustration, clear identification of product and manufacturer's name, and continuity of advertising. The fact was developed that purchasing men look to advertising as a primary source of information regarding products and sources, that various means are used to file such information for reference, and that the purchasing department serves effectively as a clearing house for routing such material to technical and operating men throughout their respective organizations.

REPORTS ON NATIONAL CONVENTION EASTERN NEW YORK

Members of the Purchasing Agents Association of Eastern New York, who attended the 31st Annual Convention and Inform-A-Show of the National Association at Chicago May 26-29, reported their views and findings at the June 22nd meeting of the local association which was held at White Sulphur Spring Hotel, Saratoga Lake, New York on June 22nd. The business meeting was a part of the annual June outing of the association, with the afternoon given over to baseball, horseshoes, darts, croquet and swimming.

CANON OF AMERICANISM SEATTLE MEETING

In addition to an address by Superior Court Judge Matthew W. Hill on "Canon of Americanism", and showing of technicolor movies entitled "Pan American Hi-Ways" by courtesy of the Allis Chalmers Co., at the June 13th meeting of the Purchasing Agents Association of Washington, at the Washington Athletic Club, Seattle, reports were made on various phases of the Chicago convention of the National Association by delegates who attended that meeting.

PIDGEON REELECTED PRESIDENT OF MEMPHIS ASSOCIATION

At its May dinner-meeting, The Memphis (Tenn.) Association of Purchasing Agents reelected James Pidgeon, Pidgeon-Thomas Iron Co., to the office of president for 1946-47. Other officers elected are: vice president, Martin Sunderland, Memphis Union Station; secretary, Preston Allen, Orgill Bros. Co.; treasurer, Miss Mary Speltz, Memphis Plywood Corp. M. A. Stepherson, Jr., will serve as a member of the board of directors and W. E. Rier as national director.

(Continued on page 232)



PERHAPS you didn't know that for miscellaneous items, too, all you have to do is call Chase.

Brass washers, or welding rods, brass and copper rivets, or tacks . . .

such things as these are carried in stock at Chase warehouses. If your local Chase warehouse hasn't what you want in stock they can get it for you from one of 20 Chase warehouses:

Remember — CHASE SERVICE IS AS CLOSE AS YOUR PHONE



Chase
BRASS & COPPER CO.

Waterbury 91, Connecticut
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

This is the Chase Network — handiest way to buy brass

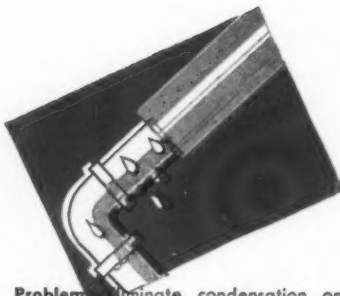
INCORPORATED

ALBANY† ATLANTA† BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON† INDIANAPOLIS KANSAS CITY, MO LOS ANGELES MILWAUKEE MINNEAPOLIS
NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† SAN FRANCISCO SEATTLE ST. LOUIS WASHINGTON† (†Indicates Sales Office Only)



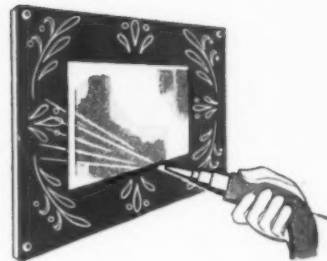
Problem—To manufacture simple lamp shade with maximum speed, minimum labor; taping paper shade to wire frame.

Solution—Mystik Self-Stik Cloth Tape goes on easily, holds permanently, eliminates moistening operation and drying time.



Problem—Eliminate condensation on cold water pipes and dripping with resulting damage to machinery, storage, materials, etc.

Solution—Mystik Self-Stik DRI-PIPE stops pipe drip positively. A combination of thick insulation and waterproof tape, it applies easily, quickly to pipes without tools.



Problem—To sand blast designs on mirrors and glassware with maximum speed, minimum spoilage.

Solution—Mystik SAND BLAST is ideal masking material made especially for sand blasting glass. Designs are die cut in the Self-Stik mask. Applies and removes easily, cleanly. Positive protection.

Methods *by Mystik*



Problem—(1) To mask stainless steel at the mill and during fabrication for protection against scratches, mars, other injuries. (2) Masking material must remove easily without marring polished surface.

Solution—Mystik MASK, a new development, gives positive protection; applies directly from roll to surface (no liner necessary); peels off instantly in one piece. Saves production time. Reduces spoilage, re-polishing.

- Do you have an operation in your plant which you think could be speeded up or reduced in cost? There's a good chance that a "Mystik Method" will do the job. Mystik Adhesive Products provide ways to do things better. They will solve your problems.

Mystik comes in many forms—MYSTIK SELF-STIK TAPE, cloth or paper, up to 36" wide—MYSTIK MASK, a reinforced paper material for protecting fine surfaces—MYSTIK SPRA-MASK, a fast method for stencil spray-painting designs and insignia—MYSTIK SAND BLAST, a protective covering for sand blasting glass—MYSTIK DRI-PIPE, an insulation to stop pipe drip—MYSTIK-PRINT, for Self-Stik labels and signs.

FREE—Send for Mystik samples and interesting new booklet showing how *Methods by Mystik* can cut costs in your plant. Mail coupon to—Mystik Adhesive Products, 2634 N. Kildare, Chicago 39. Sales offices in major cities. Export office, New York City. Canada—G. A. Moggridge Co., Ltd., St. Catharines, Ont.

Mystik Adhesive Products, 2634 N. Kildare, Chicago 39.

SEND FREE BOOKLET AND FOLLOWING SAMPLES:

- ☐ Mystik Cloth Tape; ☐ Mystik Waterproof Cloth Tape;
☐ Mystik Mask; ☐ Mystik Spra-Mask; ☐ Mystik Sand Blast;
☐ Mystik Paper Masking Tape; ☐ Mystik Dri-Pipe; ☐ Mystik-Print.

Name _____ Title _____

Company _____

Address _____



Problem **TROUBLE-SHOOTING with SEAMLESS STEEL TUBING**

AUTOMOTIVE INDUSTRY

The Problem: To find a material for use in rear axle housings and spindles, light enough to meet designers' weight requirements, sturdy enough to withstand the severe stresses and strains to which it will be subjected in normal service.

The Answer: OSTUCO Seamless Steel Tubing, inherently wear-resisting, yet light enough to contribute to a favorable weight-horsepower ratio.

Even a Bus has a Housing Problem



The C41, newest of the complete line of Mack trucks and busses, represents an advanced conception of the modern urban motor coach. This sleek, highly efficient unit embodies numerous design and construction features, each of which contributes to more economical operation in dense city traffic.



*Experienced craftsmen like Colonel Mayer, shown here at the billet heating furnace, have spent years in developing the skills that have created the Ostuco tradition of quality manufacture. Mayer is a member of the Ostuco 50-Year Club.

The same research, design and manufacturing experience* that enabled The Ohio Seamless Tube Company to help solve this important structural problem has been equally effective in solving similar problems in many other industries. Complete information and a free copy of "M-1", an informative booklet on steel analyses, tolerances and machining methods, may be obtained from the nearest sales office.

THE OHIO SEAMLESS TUBE COMPANY



**Plant and Main Office
SHELBY, OHIO**

SALES OFFICES: Chicago 6, Illinois, Civic Opera Bldg., 20 North Wacker Dr.; Cleveland 14, Ohio, 1328 Citizens' Bldg.; Detroit 2, Michigan, 2857 E. Grand Blvd.; Houston 2, Texas, 927 A M & M Bldg.; Los Angeles, Calif., Suite 200-170 So. Beverly Drive, Beverly Hills, California; Moline, Illinois, 225 Fifth Avenue Bldg.; New York 17, New York, 70 East 45th Street; Philadelphia 9, Pa., 123 S. Broad St.; St. Louis 6, Missouri, 1230 North Main St.; Seattle, Washington, 1911 Smith Tower; Syracuse, New York, 501 Roberts Ave.; Tulsa 3, Oklahoma, Refining Engine & Equipment Co., 604 Ten E. 4th St. Bldg.

• Canadian representative: Railway & Power Engineering Corp., Ltd. Hamilton, Montreal, Noranda, North Bay, Toronto, Vancouver, Windsor and Winnipeg.

MANUFACTURERS OF SEAMLESS AND ELECTRIC-WELD STEEL TUBING

Here are the WINNERS OF THE STERLING BOLT COMPANY "BOLTO" at the recent N.A.P.A. Convention in Chicago

1. **MR. GEORGE MERCER**
P. A. of the P. R. Mallory Co.
Congratulations and a Table Model Radio to Mr. Mercer.
2. **Mr. C. J. COLLINET**
P. A. of the Barrett Cravens Co.
Congratulations and a hamper of liquors to Mr. Collinet.
3. **MR. LES CLOSE**
Service Supt. of the Dictaphone Corp.
Congratulations and a Parker "51" pen and pencil to Mr. Close.

Estimates of the fasteners in the jar ran from 150 to several million, but most guesses were close to the actual count of 5625. We enjoyed meeting you all at the convention and hope that we may have the privilege of serving you soon. Remember, for single source buying of a complete line of quality fasteners — specify **STERLING BOLT**.

Some of Our Products

| | |
|----------------|-----------------|
| MACHINE SCREWS | STOVE BOLTS |
| CAP SCREWS | STEP BOLTS |
| CARRIAGE BOLTS | NUTS OF ALL |
| MACHINE BOLTS | TYPES and SIZES |



Sterling products are used for thousands of applications in scores of industries—everywhere bolts and nuts are specified.

STERLING BOLT Company

213 West Jackson Blvd.
CHICAGO 6, ILL.

(Continued from page 228)

In recognition of their services to the association, a gold lapel pin, bearing the National Association emblem were presented to the officers and directors at the June meeting. In lieu of the July meeting, the organization will have a buffet dinner and dance at the University Club, each member to bring a prospective member as a guest.

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METROPOLITAN BUYERS ELECT S. J. TIETJEN PRESIDENT

Stewart J. Tietjen of Clarence Whitman & Sons, Inc., New York, was elected president of the Metropolitan Purchasers' Assistants Club, New York City, at the June 11th meeting of that association held in Midston House, New York. Other officers elected are:

Vice president, Alfred A. Northacker, M. N. Kellogg Co., New York;

Secretary, Harold A. Peck, Purolator Products Inc., Newark, N. J.;

Treasurer, Robert O. Condit, American Oil & Supply Company;

Chairman of the Board, Thomas H. Masters, Worthington Pump & Machinery Corporation.

The regular meeting was preceded by a forum under the direction of H. John Byrne, Federal Telephone & Radio Corp., on "Benefits Derived from M.A.P.C. Membership," following which Associate Editor George Henry of Purchasing Magazine reviewed the recent N.A.P.A. annual convention which was held in Chicago.

"RAILROADING"

A double feature program on railroading highlighted the May 19th meeting of the Club. Guest speaker Robert Hayes of the New York Central R.R. spoke on the future of railroads and their place in the world of tomorrow. Following his address, the Pennsylvania R.R.'s film, depicting the history of the railroad and its part in the country's expansion was shown. A forum discussion, lead by John S. Babiy, P.A. for Adams Laboratories, on the subject of "Purchasing Forms and Procedures," preceded Mr. Hayes' talk.

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MILWAUKEE HOLDS ANNUAL MEETING, GOLF TOURNAMENT, ELECTION

June 14th marked the annual meeting and golf tournament of the Milwaukee Association of Purchasing Agents, held at the North Hills Country Club. Golf started at 1:00 p.m., prizes including the Stilp-Block golf trophy, which was presented to the lowest score holder. Dinner followed, with the courses interspersed with a 4-act floor show.

New Officers

Officers elected for the 1946-47 year are: President, E. L. Block, Unit Drop Forge div. of Fuller Mfg. Co.; Vice president, F. G. Syburg, Chain Belt Co.; Treasurer, W. H. Pritchard, Kearney & Trecker Corp.; Director (1950) R. E. Holmes, Pressed Steel Tank Co.; Nation-

al director, L. C. Stilp, Kimberly-Clark Corp.; Secretary, C. H. Dawley, Ampco Metals, Inc.; Director (1948) to fill unexpired term of W. H. Pritchard, H. A. Frank, Sterling Wheelbarrow Co.

New active members welcomed into the Milwaukee Assoc. at its May 14th meeting include Conrad A. Lischeron of the Loeffelholz Co., and James H. Young, Cleaver-Brooks Co. Associate member named is Kenneth A. Tamms of Ampco Metals, Inc.

1 1 1

LOWE TO HEAD NEW ENGLAND ASSOCIATION

Lloyd A. Lowe, purchasing agent for the C. H. Sprague & Son Co., Boston, was elected president of the New England Purchasing Agents Association at its annual meeting. Other officers elected are: Vice president, Kendrick Burns, S. D. Warren Co.; and treasurer, Daniel G. Donovan, Pepperell Mfg. Co. New directors include Frank P. Craig, Boston Edison Co., George D. Means, State Street Trust Co., and George F. Williams, Eastern Steamship Lines, Inc.

The summer outing of the New England Association was held at the Club House of the United Shoe Machinery Athletic Association in North Beverly, Mass., on June 12th. The program included soft-ball, bowling, horseshoe pitching, tennis, golf, and a free-for-all putting contest.

1 1 1

J. FRANK STEPHENSON HEADS HAMILTON ASSN.

J. Frank Stephenson, Kraft Containers Ltd., Hamilton, Ont., is the new president of the Purchasing Agents Association of Hamilton, for the 1946-47 association year. Other new officers are as follows: Vice presidents, R. J. Allan, Wallace Barnes Co. Ltd., and H. F. Witton, N. Slater Co. Ltd.; Recording secretary, E. R. Johnson, United Car Fastener Co.; Corresponding secretary, H. M. Everett, John Bertram & Sons Co. Ltd.; Treasurer, Arthur Dyer, Reid Press Ltd.

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LOUISVILLE AGENTS NAME NEW OFFICERS

At the May meeting of the Purchasing Agents Association of Louisville, held at the Kentucky Hotel on the 21st, the following officers were elected for the 1946-47 Association year: President, Edwin V. Bulleit, Wood Mosaic Co.; First vice president, J. T. Kinberger, Gulf Refining Co.; Second vice president, George T. Lawler, Tafel Electric & Supply Co.; secretary, Edgar E. McCulley, Courier Journal Job Printing Co.; Assistant secretary, Clarence Schardein, C. S. Schardein Sons Co.; Treasurer, Louis A. Kirchhofer, Commonwealth Life Ins. Co.; Directors, T. A. Corcoran of Courier-Journal & Louisville Times, W. M. Kerrick of Mengel Co., and Louis M. Hartman of American Creosoting Co. Prof. Chas. W. Williams of the University of Louisville gave his monthly economic round-up. President E. V. Bulleit an-

(Continued on page 234)

PERMANENT MAGNETS MAY DO IT BETTER

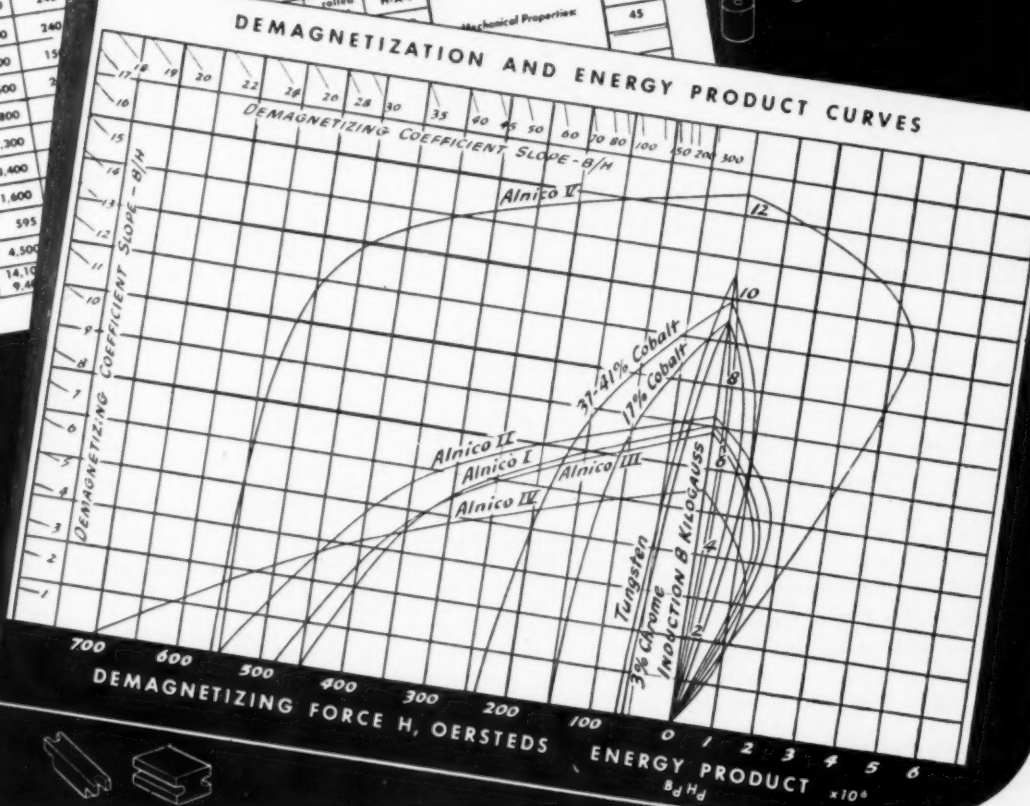
Characteristics of Permanent Magnet Materials

| MATERIALS AND TYPICAL COMPOSITION —% | Residual Gauss | Coercive H, Oersteds | External Field, Gauss | H Peak | B Peak Gauss | Weight lb/cu in | Form | Mechanical Properties | Tensile Strength | Modulus of Elasticity | Resistivity 25°C, microhm-in |
|---|----------------|----------------------|-----------------------|--------|--------------|-----------------|--------|-----------------------|------------------|-----------------------|------------------------------|
| ALNICO I BLUESTREAK 12 Al, 21 Ni, 5 Co, Bal Fe | 7,000 | 440 | 1.4 | 2,000 | 12,300 | .249 | cast | H-B | 4,197 | 13,973 | 75 |
| ALNICO II REDSTREAK 10 Al, 17 Ni, 12 Co, 6 Cr, Bal Fe | 7,200 | 560 | 1.64 | 2,000 | 12,300 | .249 | cast | H-B | 3,080 | 7,230 | 65 |
| SINTERED ALNICO II 10 Al, 17 Ni, 12 Co, 6 Cr, Bal Fe | 6,900 | 475 | 1.35 | 2,000 | 12,000 | .249 | cast | H-B | 12,386 | 22,510 | 13.2 |
| ALNICO III GREENSTREAK 12 Al, 21 Ni, Bal Fe | 6,900 | 475 | 1.35 | 3,000 | 11,850 | .249 | cast | H-B | 9,174 | 24,483 | 12.3 |
| ALNICO IV BLACKSTREAK 12 Al, 20 Ni, 5 Co, Bal Fe | 5,500 | 700 | 1.35 | 3,000 | 16,300 | .264 | cast | H-B | 5,456 | 10,826 | 11.5 |
| ALNICO V 8 Al, 14 Ni, 24 Co, 3 Cr, Bal Fe | 12,500 | 550 | 4.5 | 3,000 | 11,500 | .26 | cast | H-B | | | 38 |
| ALNICO XII 6 Al, 18 Ni, 35 Co, 8 Ti, Bal Fe | 5,700 | 1,000 | 1.8 | 300 | 12,900 | .28 | rolled | H-A-F PA | | | 30 |
| CHROME STEEL—HYFLUX 30 Cr, 9 C, 3 Mn, Bal Fe | 9,500 | 60 | .26 | 300 | 12,500 | .281 | rolled | H-A-F PA | | | 27 |
| CHROME STEEL 8 Cr, 105 C, 35 Mn, Bal Fe | 8,500 | 65 | .32 | 300 | 14,600 | .292 | rolled | H-A-F PA | | | |
| TUNGSTEN STEEL 6 W, 3 Mn, 7 C, Bal Fe | 10,500 | 40 | | 1,100 | 15,600 | .296 | cast | H-A-F | | | 45 |
| MI COBALT—ROLLED 38 Co, 7 C, 3 Mn, 4 Cr, 5 W | 10,000 | 240 | | | | | rolled | H-A-F | | | |
| 36% COBALT—CAST 36 Co, 7 C, 3 Mn, 4 Cr, 5 W | 8,500 | 240 | | | | | cast | H-A-F | | | |
| 12% COBALT 17 Co, 75 C, 3 Mn, 2.5 Cr, 8 W | 9,500 | 15 | | | | | cast | H-A-F | | | |
| Bismalloy 17 Mn, 12 Co, Bal Fe | 5,800 | | | | | | | | | | |
| CUNIFE I 60 Cu, 20 Ni, 20 Fe | 7,300 | | | | | | | | | | |
| CUNIFE II 50 Cu, 20 Ni, 25 Co, 27.5 Fe | 3,400 | | | | | | | | | | |
| CUNICO 50 Cu, 21 Ni, 29 Co | 1,600 | | | | | | | | | | |
| Vectin Sintered Oxide 20 FeO, 40 Fe ₂ O ₃ , 25 CoO | 595 | | | | | | | | | | |
| Silmanal Silver Alloy 86.75 Ag, 8.8 Mn, 4.45 Al | 4,500 | | | | | | | | | | |
| 77% Platinum Alloy 77 Pt, 23 Co | 14,100 | | | | | | | | | | |
| Vicalloy | 9,400 | | | | | | | | | | |

MATERIAL CHART CODE

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Mechanical Properties:



Reference Charts on Permanent Magnet Materials

Engineers! Product designers! For your convenience, in handy reference form, we have prepared two charts (shown in reduced size above) giving helpful data on the energy product and physical characteristics of permanent magnet materials. A supply of these, printed on durable ledger stock, 11" x 16", is available for prompt mailing to any firm or individual considering commercial applications of permanent magnets.

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Our research and engineering specialists are at your service for consultation. Complete information on the facilities of The Indiana Steel Products Company—world's largest manufacturer of permanent magnets—is presented in our technical handbook, entitled "Permanent Magnet Manual," now on the press. We will be glad to send you a copy without charge.

*** THE INDIANA STEEL

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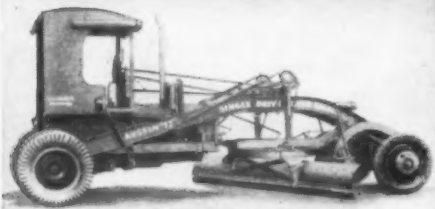


PRODUCTS COMPANY ***

Specialists in Permanent Magnets Since 1910

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Thermoid — For Progress in Industry



←
1932 Austin-Western Motor Grader. The first Austin-Western Grader, equipped with Thermoid Hydraulic Hose, represented a distinct advance in road-building machinery.

→
Today's Austin-Western Motor Grader. Like every model in the past 14 years, the 1946 Austin-Western Motor Grader is equipped with Thermoid Hydraulic Hose.



Thermoid Powerflex Hydraulic Control Hose used on modern, heavier, more powerful Austin-Western Motor Graders is burst-tested to more than three times the pressure required fourteen years ago. And modern synthetics have solved the old bugbear, deterioration.

In factories, mills and quarries—Thermoid has contributed to industrial progress by manufacturing rubber products that can always be relied upon to do the job for which they were made—plus some more for safety. As engineers and designers evolve machinery to achieve bigger jobs, faster—they will continue to find Thermoid products ready for the new assignments.

Consultation with your Thermoid distributor may develop ways to help you improve processes and reduce costs. Like industrialists everywhere, you will find that when it comes to problems involving hose, belting or friction materials—it's good business to do business with Thermoid.

THE THERMOID LINE INCLUDES: Transmission Belting • V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products • Molded Hard Rubber Products.

Thermoid Rubber

DIVISION OF THERMOID COMPANY

TRENTON 6, NEW JERSEY

Contributor to Industrial Advancement Since 1880

(Continued from page 232)

nounced on assuming the chair that arrangements had been completed for holding the association's summer outing at the New Albany (Indiana) Country Club.

1 1 1

DUPLICATE FORMS DISCUSSED AT SPRINGFIELD MEETING

Members of the Purchasing Agents Association of Springfield, Ohio, at their May 22nd meeting in the Shawnee Hotel, heard Mr. Kennedy of the Egry Register Co., Dayton, give an interesting and instructive talk on modern, economical industrial and clerical duplicate forms for use in automatic registers, typewriters or billing machines.

1 1 1

SAFETY CITED AS P.A.'s RESPONSIBILITY

At its May 27th meeting in the Hotel DuPont, the Industrial Purchasing Agents of Wilmington, Del., heard a discussion on the responsibilities of purchasing agents and other divisions of an industrial concern for the safety of employees. Address was given by Harold L. Miner, who pointed out that the P.A. has a moral responsibility to obtain efficient fire fighting equipment for "money saving is insignificant compared to safety assurance."

1 1 1

NEW OFFICERS FOR ALABAMA ASSOCIATION

At its May meeting, the Purchasing Agents Association of Alabama elected T. Hoyt Prater, purchasing agent of McWane Cast Iron Pipe Co., to head the organization for the coming year. Mr. Prater, who took office in June, succeeds Bernie B. Jones, who was elected national director. Other officers elected are: First vice president, C. T. Moates, Matthews Electric Supply Co.; and Second vice president, H. A. Wilson, Long-Lewis Hardware Co. Newman M. Yeilding, Birmingham - Southern College, and Charles R. Cornic, Birmingham Board of Education, were re-elected treasurer and secretary respectively.

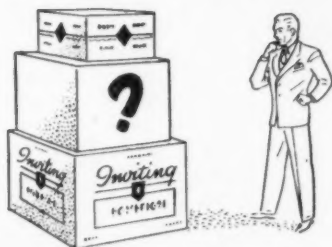
1 1 1

DISCUSS MATERIALS AVAILABILITY CANTON ASSOCIATION

Thirty members of the Canton Association held a discussion of the availability of materials, and general conditions at a meeting of the association held in the Elks' Club, Canton on May 15th. Ralph R. Miller was in charge of the discussion and practically all the members participated. It was the general opinion that due to strikes, OPA restrictions, and other factors most materials would be scarce for many months and possibly even through the year 1947. In spite of the OPA boast on holding the price line with the exception of a few "bulges" most manufacturing costs had advanced at least 15%. The unsettled labor situa-

(Continued on page 236)

**BETTER
"CORDIALLY
ADVERTISED" than "Politely Ignored"**



In a competitive world, it is good business to transform ordinary shipping boxes into potent "traveling billboards" which advertise, not ignore, the products they carry. It's not only good business, it's good merchandising.



HERE'S SHIPPING
BOX INDIVIDUALITY

Now, until ample raw materials are again available, plan your new packaging program. When your shipping boxes identify your product throughout distribution . . . they help sell, create good will, build customer acceptance. In the H & D Package Laboratory, skilled artists, designers and package engineers will make your shipping boxes possess true indi-

viduality . . . will make them as representative of your company and product as your letterheads and trade mark. The complete story of shipping box individuality is told in the booklet "How to MERCHANDISE with Corrugated Boxes." Address The Hinde & Dauch Paper Company, Executive Offices, 4602 Decatur Street, Sandusky, Ohio.



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RECESSED HEAD **HOLTITE** **PHILLIPS** **PRECISION MADE**
SCREWS, BOLTS, ALLIED FASTENINGS

As the tapered bit does not slip or jump from the perfectly mated recess in head of these modern fastenings, all types of power drivers can be used safely, even on finished parts. Yes, you can make power driving standard practice in your fastening operations to save 50% and more in driving time. In addition, HOLTITE-Phillips screws and bolts effect extra economies by eliminating spoiled work, screw head breakage, burr removal and injuries to workman.

Holding on end of driver or bit, these cost-cutting fastenings can be moved into position and driven with one hand, leaving other hand free to steady or support work. Screws are driven straight, and set up tighter to strengthen assembly. No burrs to tear clothes or injure the hands of users of your products!



CONTINENTAL
SCREW CO. New Bedford, Mass., U.S.A.

(Continued from page 234)

tion is also a very disturbing factor to practically all producers. It was reported that one fractional — horse-power electric motor manufacturer was asking his customers to estimate their requirements through the year 1951 in order to make up production schedules. Altogether the picture painted was not a rosy one, although a bright spot was noticed here and there.

The tellers reported that as a result of the mail balloting the following members had been elected as directors of the association for the year beginning with the June meeting: Kelly Arnold, Hilscher-Clarke Electric Co.; Max J. Birzer, Jr., Superior Switchboard & Devices Co.; Karl Foltz, Berger Mfg. Division, Republic Steel Corp.; Herbert A. Grauman, Timken Roller Bearing Co.; Ralph R. Miller, The Deming Co., Salem, Ohio; Leo F. Ryan, The Ohio Power Co.; Russell T. Thomas, The Crane Co.

**POST CONVENTION MEETING
 AT TULSA**

Important features of the 31st annual convention and Inform-A-Show of the National Association held at Chicago May 26-29, were reviewed at Post-Convention meeting of the Purchasing Agents Association of Tulsa on June 11th, by observers who attended the regular sessions, the Oil Company Buyers' Group meeting, Public Utility Buyer's Group meeting, and others. On June 22nd members of the association took part in the Purchasing Agents-Salesmen golf tournament at Indian Hills Country Club.

**MAY ACTIVITIES OF P.A.A. OF
 BRITISH COLUMBIA**

By R. A. BAKER

"A gross turnover tax is, in every way, superior to the present system of sales tax," in the opinion of R. V. Robinson, Assistant Secretary of the B.C. Division, Canadian Manufacturers' Association, guest speaker at the May meeting of the Purchasing Agents Association of British Columbia, Vancouver, B.C. The turnover tax, he explained, simply means that every business, including doctors, lawyers and others who escape sales tax payment, would turn over a small percentage of their month's business to the government. In that manner the revenue would be higher and the method of collection easier.

The following were elected to the offices indicated: President, J. B. Watson, Silbak-Premier Mines; Vice president, R. A. Baker, Powell River Co., Ltd.; National director, retiring president L. F. C. Kirby, Vancouver General Hospital; Secretary, H. Mulholland, Vancouver Breweries, Ltd.; Treasurer, Borden Smith, Canadian Fishing Co.

President Kirby and Vice President Watson reported on the annual tri-state conference held in Seattle and complimented the five speakers from our association on the excellent showing made on that occasion. Our Seattle friends proved

(Continued on page 238)



AT 15th AND ADAMS A YOUNG LADY LOOKS AT HER WATCH

"Nine-twenty-seven . . . one minute more." Chances are better than even that her bus will be on time. Every day, America's motor bus lines haul close to 20,000,000 people over 390,000 miles of bus routes. On many thousands of these buses, Exides supply the storage battery power—efficiently, economically.

There are Exides for every storage battery need. Exides furnish safe, dependable motive power for the efficient, time-saving electric industrial

truck and for mine haulage units. They supply power for Diesel cranking on automotive equipment, stationary engines and other services. Telephone and telegraph companies, radio stations, railroads, ocean vessels and aircraft use thousands of

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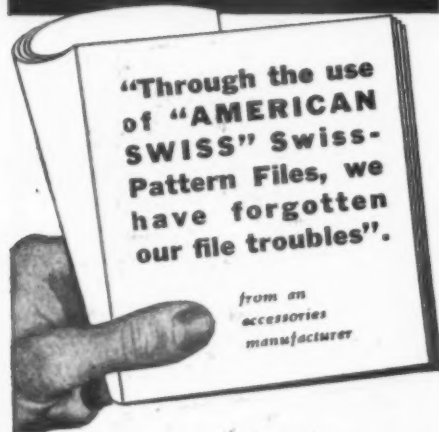
BATTERIES

Exides for many important tasks. And on millions of cars, trucks and buses they continue to prove that "When it's an Exide, you start."

For 59 years, the name Exide has stood for dependability, economy, safety and long-life. Information regarding the application of storage batteries for any business is available upon request.

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

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You, too, can eliminate file troubles . . . secure best results at least costs on your intricate and accurate filing work . . . by standardizing on "AMERICAN SWISS" Swiss-Pattern Files. The tough, strong metal . . . correct and uniform hardness . . . sharp, deeply cut teeth . . . long-filing surface of these precision tools assure faster work, longer life, and lowest filing expense.

Furthermore, the large "AMERICAN SWISS" line assures an exactly suitable selection for each job, and each file is guaranteed to be perfect in every respect.

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Buy from Our Distributor
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ASK FOR THEM
BY THIS NAME

American Swiss

SWISS PATTERN FILES

(Continued from page 236)

splendid hosts and President Kirby expressed the hope that British Columbia would be equally successful in staging next year's conference in Vancouver.

The Food Industries Group, under the chairmanship of Alex. Dunbar of Vancouver Supply Co., Ltd., held a most successful meeting during the month, at which Jack Kirkland of Delnor Frozen Foods, Ltd., delivered a short address and answered questions on the subject of frozen and canned foods.

The Open Forum, conducted by E. B. Barteau of White Pass & Yukon Route, met in Hotel Devonshire during May. A wide range of purchasing subjects was aired and discussed.

J. N. Lundie of Paragon Supplies, Vancouver, A. E. Pinton, Vancouver Engineering Works and K. W. Hall of Greater Vancouver Water District, were installed as members of the association.

HOST TO STEEL REPRESENTATIVES AND ELECT NEW OFFICERS— FORT WAYNE

The Purchasing Agents Association of Fort Wayne, Ind., was host to representatives of all the major steel companies at its May 20th meeting held at the Chamber of Commerce, and approximately 125 members and guests attended. The speaker was Harold K. Howe, Washington representative of the LaSalle Steel Company, and editor of the LaSalle Washington letter. New officers of the association were elected as follows: *President*, H. Jack Printz, Essex Wire Corporation; *Vice president*, E. A. Lewis, Wayne Knitting Mills. *Secretary*, L. R. Wakefield, Fort Wayne branch manager of the Minnesota Linseed Oil Paint Company; *Treasurer*, E. F. Reinking, American Steel Dredge Company. *National director*, G. R. Smith. G. H. Nelson, Herbert Buehler, Carl Jordan and John Cooper were elected to the board of directors.

METALS FAMILIARIZATION PROGRAM ROCHESTER, N. Y.

The first of a series of 8 to 10 talks, to acquaint purchasing agents with the properties of tool, alloy and stainless steel, was given on May 13 in the Central YMCA, before members of the Rochester Association of Purchasing Agents. W. J. Conley, former professor of metallurgy and currently with the Carpenter Steel Corp., was guest speaker.

YEAR BOOK AND BUYER'S GUIDE RHODE ISLAND ASSOCIATION

The Rhode Island Purchasing Agents Association is distributing to its membership, its "Year Book and Buyer's Guide—1946". It constitutes an excellent manual of some 232 pages in hard, simulated leather covers. In addition to listing officers, directors and committees, and members, and twenty-page blue-section Buyer's Guide, the book contains considerable editorial material on such prac-

tical subjects as "This Job of Purchasing", "Base Point Pricing", "From One P. A. to Another", "Control of Industrial Inventory". There are also brief reviews of association meetings, commodity meetings, along with report of the educational committee.

C. B. AMOS HEADS OREGON ASSOCIATION

Clifford B. Amos, Bingham Pump Co., Portland, Ore., is the new president of the Purchasing Agents Association of Washington (state) for the 1946-47 association year. Other new officers are as follows:

William W. McCulloch, McCulloch & Sons, vice president; Merrit L. Simmons, Portland Traction Company, secretary; M. F. Hobkirk, Westinghouse Electric Supply Company, treasurer; Orville K. Buckner, Electric Steel Foundry Co., national director; Chester Bamberg, Hyster Co.; R. P. Stockwell, Gilpin Construction Co., and George Williams, Wiggins Co., Inc., executive committee.

ERIE P.A.'s SEE FILM ON ERIE

"Erie—Gem City of the Lakes," was one of the feature attractions at the May 16th dinner-meeting of the Purchasing Agents Association of Erie. Meeting was held at the Kenyon Hotel, with about 31 members in attendance. Program included three other films, "Fishing Thrills," "Follow Through" on golf, and "Famous Fights of Joe Louis." A. T. Anderson headed the program committee.

"PROSPECTS FOR THE ST. LOUIS AREA"

The May 21st meeting of the Purchasing Agents Association of St. Louis, held at the Coronado Hotel, was highlighted by an address by George C. Smith, President of the St. Louis Chamber of Commerce, on "Prospects for the St. Louis Metropolitan Area." Lester A. Dahlheimer, Purchasing Agent for the Emerson Electric Co., continued a series of talks entitled "Know Your Member Companies." Lifetime membership awards were made to Dr. F. W. Russe and Herman J. Albrecht.

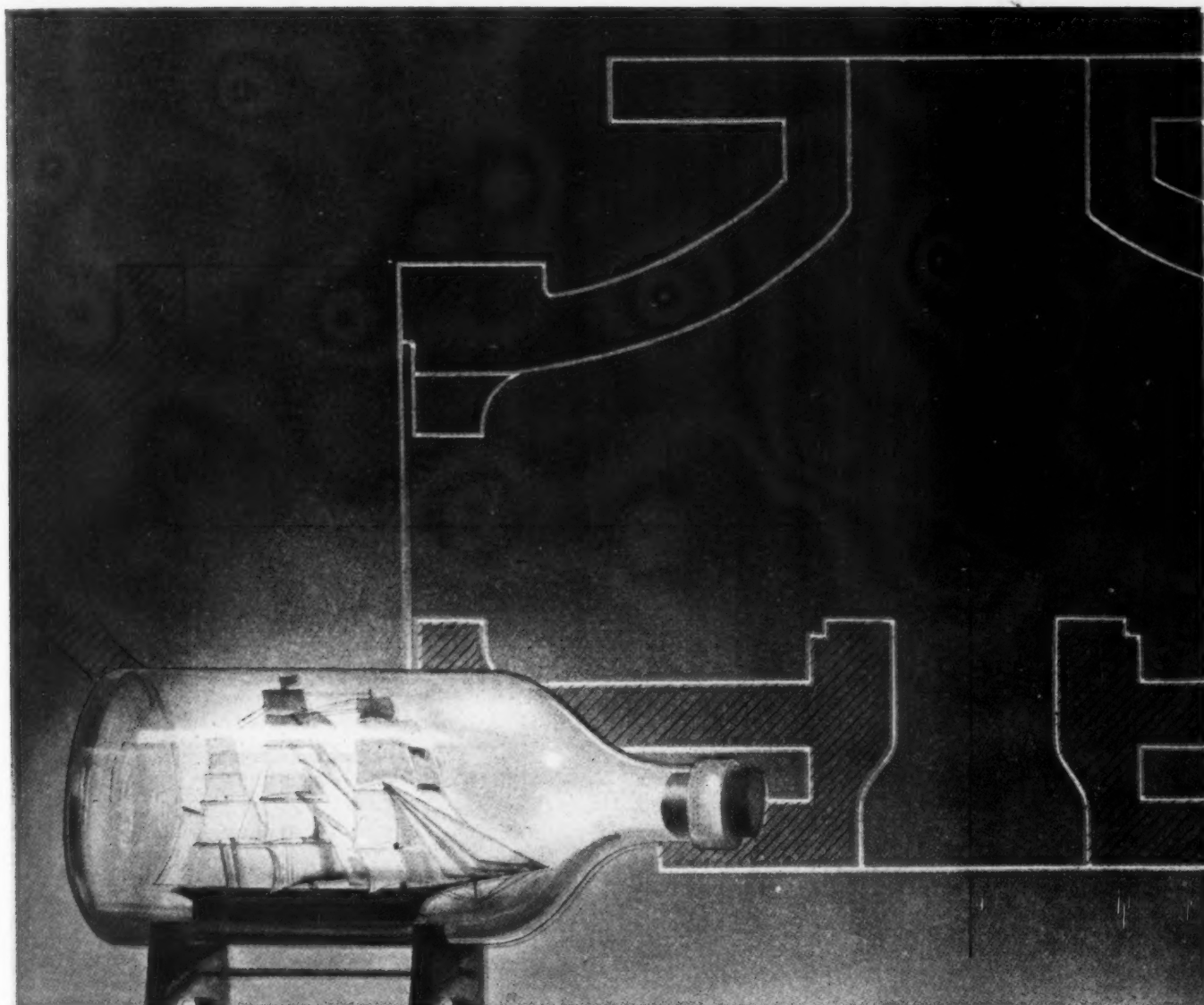
MONTREAL P.A.'s HOLD GOLF MEET

The annual golf tournament of the Purchasing Agents Association of Montreal, Can., was held at the Whitlock Golf Club in Hudson, Que., on June 11th. Tournament arrangements were in charge of Alan Potter.

GRAND RAPIDS P.A.'s HOLD ANNUAL ELECTION

Stanley T. Cook of the Clipper Belt Lacer Co. was elected president of the Grand Rapids Purchasing Agents Association at its annual meeting, held in the Rowe Hotel, Grand Rapids, on May 14th. Mr. Cook succeeds Max E. Hen-

(Continued on page 242)



Foundrymen

have to take "ship models" out of bottles

You know how a foundry makes a casting for a piece of equipment—a pump case, for example. Molten metal is poured into a mold and allowed to solidify. Obviously there are spaces in the casting which are supposed to be hollow in the finished job. To keep the molten metal out of these "hollow" spaces, "cores" are made and placed in the mold before the metal is poured. The metal flows around the core and often the core is almost completely encased in the solidified casting. The only remaining openings may be as small as the neck of a bottle. Yet the core must be taken out. To get out, through a small opening, a core which was

strong enough to support a mass of molten metal sounds as difficult as trying to get a ship model out of a bottle. Koppers has a part in this feat of the foundryman.

The cores are made of sand. To make them hold their shape, a binder is added. The essential thing in a binder is to "know when to hold and when to let go." One of the best binders used in castings, large and small, is coal tar core pitch. This is a ground pitch which is mixed with the sand. When castings are made, the heat of the molten metal carbonizes the pitch and destroys its binding power. When the time comes to take out the core, it disintegrates

into a sandy mass, frees itself from the casting and comes out through even a small opening.

Koppers produces core pitch and a great many other specialized pitches, including electrode pitch, target pitch for making clay pigeons, lens grinding pitch, battery pitches, briquette pitch, paint base pitch, etc.

If you have any problem involving industrial pitches, consult Koppers—Koppers Company, Inc., Koppers Building, Pittsburgh 19, Pa.

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The name Bunting long has been synonymous with finest quality. The availability is immediate—from your nearest Bunting Authorized Distributor. Write for Catalog. The Bunting Brass & Bronze Company, Toledo 9, Ohio. Branches in principal cities.

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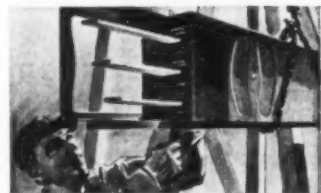
43

BRONZE BEARINGS ☆ BUSHINGS ☆ PRECISION BRONZE BARS

Plugged in . . . power on . . . time 12 minutes



NO WAITING FOR POWER with a BUStribution System—simply raise the plug to the nearest plug-in opening, snap its contact fingers over the busbar conductors and bolt the plug to the duct casing. The plug itself is a current protective device for the machine it serves.



SCREW DRIVER AND WRENCH are all the tools you need to completely dismantle and reassemble a BullDog BUStribution System. Made up of prefabricated, standardized sections, the entire system can be used again and again in new combinations and at new locations. No fabrication on the job is necessary.



NO SCRAP WITH ANY MOVE! There is no waste when you move a BullDog BUStribution System from one location to another. The component materials—steel duct, copper bus bars and vitreous porcelain—do not readily deteriorate and can be used indefinitely.

Capacities: Feeder Type—600 Amps. to 4000 Amps.; Plug-in Type—225 Amps. to 1350 Amps.

You Can Do It With BullDog BUStribution DUCT

Quick production changes are easy to make in a plant equipped with BullDog BUStribution Duct, because each 10-foot section has ten handy plug-in outlets for the ready insertion of circuit-protective plugs to convey current from the bus bars in the duct to the machine.

One machine or a whole battery of machines can be moved—anywhere in your plant—without costly delays for rewiring. It's actually less than a 12-minute job to plug in a machine at any new location—and you cut in the power without down time for the rest of the line.

Because they are prefabricated, BullDog Bus Duct systems save countless hours of installation time. And their flexibility gives you power and light where they are needed and when they are needed. BullDog Duct systems can be moved quickly from one production set-up to another with complete re-use of all material and full protection against accidental short circuits.

If you would like to learn more about this flexible, economical method of power distribution, call a BullDog field engineer, or write for descriptive folders.

BullDog Also Manufactures Vacu-Break Safety Switches—SoftFuse Panelboards—Switchboards—Circuit Master Breakers—Industrial Trol-E-DUCT for Portable Tools, Cranes and Hoists—Universal Trol-E-DUCT for completely flexible lighting.

BULLDOG

ELECTRICAL DISTRIBUTION SYSTEMS



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In Canada: BullDog Electric Products, Ltd., Toronto. Field Engineering Offices in All Principal Cities.

CAN YOU GUESS THE ANSWERS?



1. What industry produces 170,000,000 units a day?

The bolt and nut industry. The first American bolt and nut factory 100 years ago produced 3,000 units a year. Now, in a single day, the industry produces more units than there are people in the United States. Acco's Maryland Bolt and Nut Company is an important factor in this industry which produces 170,000,000 units a day.

2. How many kinds of lawn grass grow in the U.S.A.?

The answer is about 30 different kinds. The one variety which is used more widely than any other is Kentucky Blue Grass. And the lawn mower which makes the mowing job easier on every kind of grass is the Pennsylvania, made by Acco's Pennsylvania Lawn Mower Division.



3. How does rigging help win yacht races?



A yacht sails faster when rigged with wire rope of minimum weight and diameter. That is why many yachts are equipped with Koröless rigging—a product of Acco's Hazard Wire Rope and American Cable Divisions. Koröless is lighter because made of stainless steel. It can be used in smaller diameters because it is stronger.

These are only a few of the primary products made by the 17 divisions of ACCO: Chain • Wire Rope • Aircraft Cable • Fence • Welding Wire • Cutting Machines • Castings • Wire • Springs • Lawn Mowers • Bolts & Nuts • Hardness Testers • Hoists & Cranes • Valves • Pressure Gages • Automotive Service Equipment

ACCO



AMERICAN CHAIN & CABLE BRIDGEPORT CONNECTICUT

(Continued from page 238)

sick of the Central Michigan Paper Co., who becomes national director. Other officers elected are: John Van Farowe, vice president; Robert McKeon, secretary; Clifford Mueller, treasurer; and Kenneth Hodge and James W. Vogel-sang, board members. Following the election, Frederick H. Mueller, Mueller Furniture Co., addressed the members on "The Future of the Furniture Industry in Grand Rapids."

CINCINNATI MEETING

"WHAT DOES RUSSIA WANT"

Ray Brock, foreign correspondent of the New York Times, was guest speaker at the May 14th dinner-meeting of the Cincinnati Association of Purchasing Agents, held at the Gibson Ballroom. Mr. Brock's topic was "What Does Russia Want?"

K. R. STRAIGHT HEADS INLAND EMPIRE GROUP

Kenneth R. Straight of the Western Soap Co., Seattle, Wash., was elected president of the Inland Empire Purchasing Agents Association, at the annual meeting of that body. Carl E. Erickson, Hughes & Co., Seattle, was elected vice president, and I. S. Fetterman, City of Spokane, secretary-treasurer.

TODAY, TOMORROW AND THE DAY AFTER PITTSBURGH MEETING

At its May dinner meeting, held in the Hotel William Penn, Pittsburgh, Pa., on the 21st, members of the Purchasing Agents' Association of Pittsburgh heard Robert C. Downie, President of Peoples-Pittsburgh Trust Co., speak on "Today, Tomorrow and the Day After." Added feature was renditions by the "Old Tymers Quartet."

W. D. HOWE NAMED PRESIDENT ESSEX-KENT ASSOCIATION

Following are the new officers of the Purchasing Agents Association of the Essex-Kent District of Ontario:

President, W. D. Howe, Eaton-Wilcox Rich Ltd.; First vice president, E. J. Marnell, Canadian Top & Body Corporation; Second vice president, H. A. Cole, Bendix Eclipse of Canada Ltd.; Secretary, D. B. Fisher, Thorp Hambrook Co. Ltd.; Treasurer, R. P. Jones, Brunner Mond of Canada Ltd.; National director, C. H. Musson, Border Cities Wire & Iron Ltd., Windsor, Ont.; President President Howe is also a member of the Canadian Council.

CLEVELAND HOLDS SESQUICENTENNIAL MEETING

At its sesquicentennial meeting, held on May 16th in the Hotel Cleveland, members of the Purchasing Agents Association of Cleveland (Ohio) witnessed a "Parade of Mayors," in which Mayor Thomas A.

(Continued on page 246)



N·B·M Babbitt Metals *Blended by "Master Chefs"*

- THE FINEST INGREDIENTS—We use only the best virgin metals money can buy.
- A PERFECT "RECIPE"—Exhaustive laboratory tests and years of service have proved our formulas.
- EXPERT PREPARATION—Scientific controls and the master's touch assure perfect blending at the proper fusing point — freedom from oxide — absolute uniformity.

Quality tells in better service when you specify N-B-M Babbitt Metals.

N · B · M
BABBITT METALS



NATIONAL BEARING

DIVISION

ST. LOUIS • NEW YORK



PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

USE THESE

THE ROPE SHORTAGE

and how to meet it...



FINISHED BY PLYMOUTH CORDAGE COMPANY • MAY, 1942

How to take proper care of your Rope

3 STORE ROPE PROPERLY

A dry, unheated building, or a room with free air circulation is the best place to store rope when not in use. Place rope in loose coils, off the floor on wooden planks, or hang on a wooden peg.



6 DON'T OVERLOAD ROPE

The safety factor of a rope is the ratio between minimum breaking strength and the load applied. A safety factor of 5 is recommended under ordinary circumstances. Allowance for the condition of the rope should be made when determining the safety factors.



9 SHEAVE ROPE RIGHT

Small sheaves, in addition to increasing wear on rope, increase friction load. It is false economy to use a smaller sheave than is recommended in relation to the size of rope you are using.



12 AVOID KINKS

If the use of rope involves continual twisting in one direction, compensating turns must be thrown in or not to avoid damage to the rope structure.



4 DRY ROPE PROPERLY AFTER WETTING

A wet rope should never be stored—make sure that it is thoroughly dry, and thus avoid premature loss of life and strength.



7 SLACK OFF GUYS

When ropes are used as guy lines and other supports, exposed to weather, they should be slackened off to prevent overstrain due to shortening from wetting.



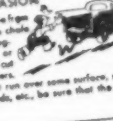
10 REVERSE ENDS

Reverse rope, end for end, periodically, so in tackle use, so that all sections of the rope will receive equal wear. When rope wear is localized in a short section, periodical shortening presents a new wearing surface.



13 AVOID UNNECESSARY WEAR AND ABRASION

Surface wear may come from allowing one rope to chafe against another, or by dragging it over sharp or rough objects which cut or break the outer fibers. Where rope must run over some surface, such as cleats, winchheads, etc., be sure that the surface is smooth.



2 REMOVE ROPE FROM COILS PROPERLY

When removing the usual right-laid rope from the coil, make sure that it unwinds in a counter clockwise direction. Lay coil flat on the floor with the inside end at the bottom. Pull end of rope up through center of coil.



5 KEEP ROPE CLEAN

If your rope gets dirty, wash with clean water—dry thoroughly before storing.



8 AVOID SHARP ANGLES OF BENDS

While floor rope is more elastic than wire rope, it is good practice not to subject it to sharp bends. A sharp bend reduces the tensile strength of rope by putting extra strain on the outer fibers.



11 DON'T LUBRICATE YOUR ROPE

A well-made rope is properly lubricated by the manufacturer—and is adequate for its service life.



14 PROTECT ROPE FROM CHEMICALS

Many chemicals are very injurious to rope fibers, and will cause severe rope damage. Rope should not be stored in close proximity to chemicals, especially acids or alkalis, or where contact with chemicals or fumes may result.



THE ROPE YOU CAN TRUST

PLYMOUTH
CORDAGE PRODUCTS

HALERTWINE • BINDERTWINE

THE ROPE YOU CAN TRUST BECAUSE IT IS ENGI

PLYMOUTH HELPS

TO TIDE YOU THROUGH THE ROPE SHORTAGE

THE WORLD-WIDE

shortage of natural rope fibers now makes it impossible to get enough rope to meet the needs of American Industry. Your Rope Supplier is doing all he can to meet your requirements. He can also help you to make the restricted rope supply last as long as possible.

AND PLYMOUTH—

world's largest rope-maker—is working with you and your Rope Supplier in this emergency. The valuable booklet and chart shown on the opposite page are just two of the practical steps Plymouth has taken to meet the critical rope shortage—in industry—at sea—on farms.

SEND COUPON TODAY FOR FREE COPIES.

Order enough of these useful 17 x 22 inch charts to tack up where your workers in rope-using departments can see them. Thousands of them are now in use—saving money *and* rope in machine shops, shipping departments, foundries. Maintenance men in Industry find them invaluable.

WITH THIS FREE CHART,

Plymouth will also send you copies of LIFT IT SAFELY, a handy book on making efficient use of rope. Tells how to reeve blocks, make splices, compute rope safety-factors, handle slings at safe angles.

Every hour of excessive rope wear and strain in your plant costs you money—may lead to needless shut-downs for rope repairs and replacement—when rope is so hard to replace! Send Coupon today!

Plymouth Cordage Company, North Plymouth, Mass.
District Offices: 296 State St., Boston 9, Mass.; 420 Lexington Ave., New York 17, N. Y.; 105 W. Adams St., Chicago 3, Ill.; 1006 Washington Ave., Houston 2, Texas; 70 Sacramento Street, San Francisco 11, Calif. In Canada: Mill, Welland, Ontario; Sales Office: Cordage Distributors Limited, 500 King St. West, Toronto 2, Ontario.

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CORDAGE PRODUCTS

ROPE • TYING TWINE
HARVEST TWINE

NEEDED FOR YOUR JOB

Plymouth Cordage Company
North Plymouth, Massachusetts

Send me copies of ☐ "The Rope Shortage"
☐ "Lift it Safely"
☐ "How to Make Rope Last"

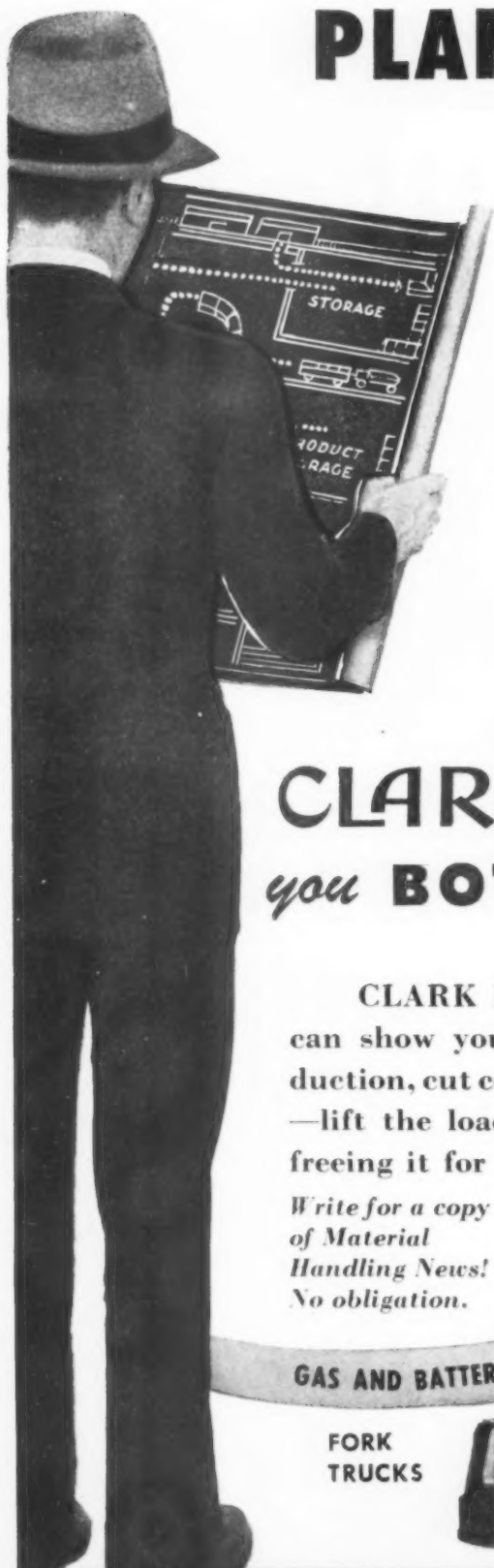
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PLANS DEVELOP

Efficient

MATERIAL HANDLING

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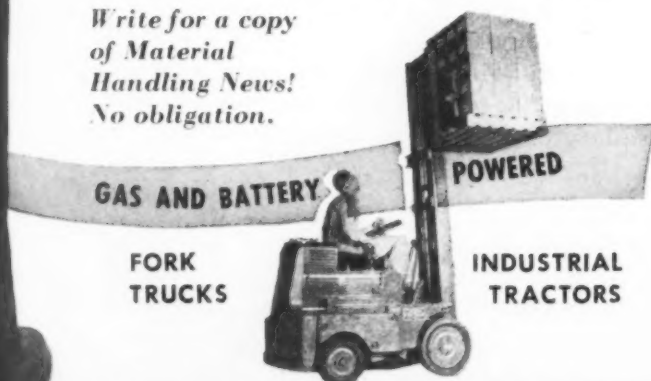
MODERN MACHINES
carry out
THOSE PLANS

↓

CLARK *will serve*
you **BOTH WAYS!**

CLARK FIELD ENGINEERS
can show you how to speed pro-
duction, cut costs, reduce accidents
—lift the load from labor's back,
freeing it for more skilled work.

*Write for a copy
of Material
Handling News!
No obligation.*



CLARK TRUCTRATOR

Division of CLARK EQUIPMENT COMPANY
BATTLE CREEK, MICHIGAN

OTHER PLANTS — BUCHANAN, JACKSON, BERRIEN SPRINGS, MICHIGAN

Products of CLARK • TRANSMISSIONS • ELECTRIC STEEL CASTINGS
AXLES FOR TRUCKS AND BUSES • AXLE HOUSINGS • BLIND RIVETS
INDUSTRIAL TRUCKS AND TRACTORS • HIGH-SPEED DRILLS AND REAMERS
METAL SPOKE WHEELS • GEARS AND FORGINGS • RAILWAY TRUCKS

(Continued from page 242)

Burke and many former Cleveland chief executives participated. In addition to Mayor Burke, featured speakers included former mayors Frank J. Lausche, who is now governor; Ray T. Miller, Edward Blythin, Harry L. Davis, John D. Marshall and Clayton Townes as well as former city managers Daniel E. Morgan and William R. Hopkins. Special guest of President Francis Allan, Elliott Electric Co. and President-Elect Tom D. Hudson, American Steel & Wire Co., was Miss Eileen Kelly, alternate sesquicentennial queen, who pinch-hit for Mary Dublin who was in California.

1 1 1

CLEVELAND EAST END GROUP ELECTS NEW OFFICERS

New officers of the East End Purchasing Agents, Cleveland, Ohio, for the 1946-47 term are as follows: Chairman, Floyd Rice, Sanymetal Products Co.; Vice president, William Gombert, Euclid Crane & Hoist Co.; Secretary, Ed Eble, E. W. Bliss Company.

1 1 1

THE STEEL INDUSTRY LOS ANGELES MEETING

At its May 23d meeting, held in the Chamber of Commerce Bldg., the Purchasing Agents' Association of Los Angeles, Calif., were addressed by Harvey Hewitt, Sales Manager, Bethlehem Pacific Coast Steel Corp., on "The Steel Industry." Virgil Waters was chairman of the program.

1 1 1

NORTHWESTERN PA. ASSOCIATION HEARS ADDRESS ON RUSSIA

At its monthly meeting held on May 2nd in the Arlington Hotel, Oil City, Pa., members of the Purchasing Agent's Association of Northwestern Pennsylvania heard guest speaker E. W. York, Jr., speak on Russia. Mr. York was directly connected with the American Embassy in Moscow for two years as assistant naval attache. Commodity discussions on steel, fuel oil and containers followed.

1 1 1

TALK ON GUIDANCE AT SAGINAW MEETING

Fifty-eight percent of the membership of the Saginaw Valley Purchasing Agents Association were present at the May 14 meeting at the Bancroft Hotel, Saginaw, Mich., at which Leslie Turner of the Saginaw Schools System gave an interesting talk on Guidance. Ray Campau was elected National Director.

1 1 1

NEW OFFICERS HEAD DAYTON ASSOCIATION

Results of the annual election, conducted by mail ballots, was announced at the May meeting of the Purchasing Agents Association of Dayton. New officers are as follows: President, T. E. Dimke; First vice president, James Murray; Second vice president, Edward San-

(Continued on page 248)

**SOFT
TOUGH
DUCTILE**

Globeiron

SEAMLESS TUBING

INDUSTRY asked for a seamless tubing with high magnetic permeability, uniform ductility, softness, toughness, and corrosion resistant properties. We supplied it in Globeiron Seamless Tubing. Because of its right combination of all these properties, Globeiron is extensively used in the electrical and radio industries; housings for generators and motors are frequently fabricated from Globeiron. It is extensively used for many pressure tubing applications. It can be worked hot or cold.

Some of your tubing problems may be profitably solved through the use of Globeiron Seamless Tubing. Globe engineers, Globe laboratory facilities are at your service. Write for Bulletins 109A and 113.

GLOBE STEEL TUBES CO.
MILWAUKEE 4, WIS., U. S. A.



★ PRESSURE TUBES
★ MECHANICAL TUBING

★ CONDENSER & HEAT EXCHANGER TUBES ★ GLOBEIRON HIGH PURITY IRON SEAMLESS TUBES
★ GLOWELD WELDED STAINLESS STEEL TUBES ★ SEAMLESS STAINLESS STEEL TUBES

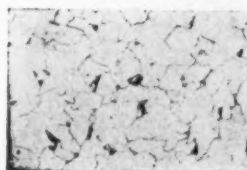
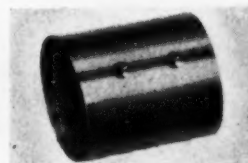


Globeiron is a high purity, low carbon iron, often known as "ingot iron". The physical properties of Globeiron make it ideal for difficult forming operations.

High Magnetic Permeability

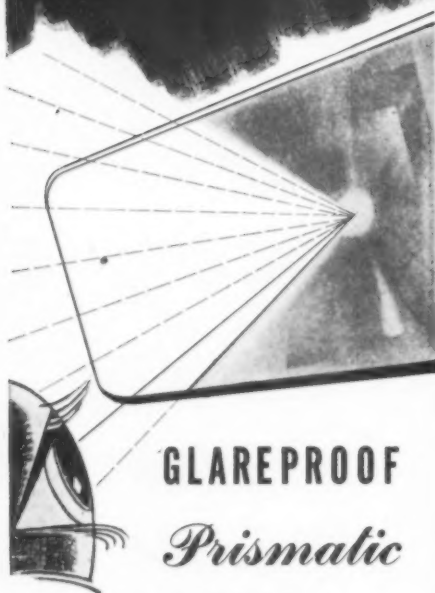
(Generator Housing)

Housing for generators and motors may be thinner and lighter when made of Globeiron. The shell of the Dynamotor shown here is an example of Globeiron adaptability.



Under the microscope (mag. 200x Nital Etch) Globeiron shows a uniform structure of almost pure ferrite with only occasional patches of pearlite.

Another Use for Donnelly-Kelley Precision Glass Parts



GLAREPROOF Prismatic MIRROR

● This prismatic rear-view mirror deflects 90% glare. Made for the Guide Lamp Division of General Motors Corporation, this piece is an example of the finest quality mirror-surfacing and fabricating that is making Donnelly-Kelley famous for precision glass parts—in the industrial world of today. May we help you, too, with your flat glass problems. We invite you to send us your inquiry.



(Continued from page 246)

ders; Secretary, E. E. Reeves; Treasurer, Robert Long; local director, E. J. Thum; and National director, C. Richard Kelly. At the meeting, members also heard a discussion on "Contact Lenses," given by Roy Marks, vice president of the Univis Lens Co. of Dayton. Motion picture, "The Battle of Great Britain" was shown. The retirement of Edward A. Wenz, purchasing agent of the Buckeye Iron & Brass Co., account ill health, was announced. He had been with the company about 44 years, 25 years of which were in the purchasing department.

WASHINGTON TRENDS DISCUSSED AT INDIANAPOLIS MEETING

Members of the Purchasing Agents Association of Indianapolis, at their May 21st meeting, held in the Columbia Club, heard Harold K. Howe, Washington, D. C., representative of the LaSalle Steel Co., discuss "Current Happenings and Trends in Washington."

FLEURY HEADS WESTERN MASSACHUSETTS ASSOCIATION

Raymond W. Fleury was installed as president of the Purchasing Agents Association of Western Massachusetts at banquet-meeting held on May 16th at the Hotel Kimball, Springfield. Other officers installed include: first vice president, Carl C. Tootill; second vice president, D. B. Sistare; secretary and treasurer, J. B. Donovan.

WASHINGTON PURCHASING WOMEN MEET IN EVERETT

The Women's group of the Purchasing Agents Association of Washington held their May meeting on the 2nd in Everett, Wash., at the Monte Cristo Hotel. A tour of the Soundview Pulp Mill said to be the largest sulphate mill in the world, followed.

GEORGE D. QUA CHAIRMAN NIAGARA PENINSULA BRANCH

George D. Qua, Niagra Plumbing Supply Co. Ltd., Niagra Falls, Can., is the new Chairman of the Niagara Peninsula Branch of the Purchasing Agents Association of Hamilton, Ont. Other new officers are: Treasurer, Alex Yule, Burgess Battery Co., Niagra Falls; Secretary, W. R. Clark, Spirella Co. of Canada Ltd., Niagra Falls; National Director, George S. Green, Provincial Paper Ltd., Thorold, Ont.

OFFICERS INSTALLED LOS ANGELES

At the June 13th meeting, the following officers of the Purchasing Agents Association of Los Angeles, were installed: President, Larry T. Bleasdale, Zellerbach Paper Co.; First vice presi-

dent, Al. B. Tietjen, Southwest Welding & Mfg. Co.; Second vice president, Burt M. Pulver, Barker Bros. Corp.; Directors, C. H. Tuttle of Standard Oil of Calif., and Virgil D. Waters of Utility Trailer Mfg. Co.; Secretary, Dean L. Fisk, Los Angeles Turf Club; and National director, Gerald A. Shelby, Los Angeles Chemical Co.

BRICK MANUFACTURING FORT WORTH

At the May 21st dinner-meeting of the Purchasing Agents Association of Fort Worth, Texas, members heard discussions on brick manufacturing and refractories and their application to industry. Speakers were S. J. Johnston and I. E. Cushing respectively.

J. B. WATSON NAMED PRESIDENT BRITISH COLUMBIA ASSOCIATION

New officers of the British Columbia Purchasing Agents Association, Vancouver, B.C., for the coming year are as follows: President, J. B. Watson, Silbak Premier Mines, Ltd.; Vice President, R. A. Baker, Powell River Co., Ltd.; Secretary, H. Mulholland, Vancouver Breweries; Treasurer, H. Borden Smith; National Director, L. F. C. Kirby, Vancouver General Hospital.

WASHINGTON D. C. WOMEN ELECT MISS BYRNE

New president of the Women's Division of the Purchasing Agents' Association of Washington, D. C., is Miss Margaret M. Byrne, purchasing officer in the procurement division of the Maritime Commission. Election was held at the May 21st meeting in the Parrot Restaurant. Other officers are: Vice president, Miss Harriet M. Lorenzen of Pennsylvania Central Airlines; Secretary, Miss Margaret B. Wager of the Treasury Dept.; and Treasurer, Miss Henrietta Rosenblatt of George Washington University. Mrs. Helen Butters of the Maritime Commission and Miss Elaine Wilkinson of the Treasury were elected directors.

STERLING BOLT GUESSING CONTEST AT CHICAGO

Out of the 3500 N.A.P.A. visitors who stopped at the Sterling Bolt Company's exhibit at the Inform-A-Show, 31st Annual Convention of the National Association held in Chicago the latter part of May, three winners tabbed themselves for the guessing contest involving bolts, nuts, screws, rivets and washers. The estimates ranged all the way from 150 units up to several million, although the majority of the estimates stayed within the range of the actual count which was 5625.

The winning entries bore the signatures of George Mercer, P.A., P. R. Mallory Company, who won a table model radio; C. J. Collinet, P.A., Barrett Cravens

(Continued on page 250)

12 tough trucks by fairbanks

Each truck in this bunch of huskies is rugged. Each proves its ruggedness by results. Each is built by Fairbanks to do a specific type of heavy duty — and do it under haulings and maulings and poundings and punishment.

In the service for which it's recommended, a Fairbanks truck shows its extra sturdiness by keeping big loads rolling in a big way. From the dozen trucks illustrated, select the one best suited for your purpose; when you put it to work for you, you'll see that your choice pays off.

WAREHOUSE TRUCK

Fig. 9272—For handling boxes, cases and miscellaneous merchandise on the floor or shipping platform. Lengths 48" to 60".



BARREL TRUCK

Fig. 9301—For handling barrels, cases, bags, drums and rolls. Four sizes, 48" to 60" lengths.



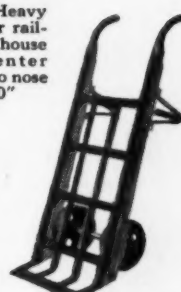
FREIGHT AND CARGO TRUCK

Fig. 9169—Extra sturdy parts for railroad and steamship use. Lower crossbar forms wheelguard 60" handles.



FREIGHT TRUCK Western Pattern

Fig. 9203-S—Heavy construction for railroad, packing house use, etc. Center straps welded to nose iron. Length 60"



BARREL TRUCK Western Pattern

Fig. 9207—Wheels set between handles for use in narrow passages, curved crossbars. 48" to 54" lengths.



BARREL TRUCK

Fig. 9090—All steel, one-man truck with adjustable slide-lock, fits all barrels. Capacity 1000 lbs., Length 58"



CEMENT OR BAG TRUCK

Fig. 9217—Heavy nose of 1/4" steel plate provides strength for handling cement, fertilizer, etc., in paper or burlap bags. Length 52".



Commander STEEL-FRAME PLATFORM TRUCK

Fig. HQ2448—Steel bound hardwood platforms; sturdy construction, ball bearing wheels. Sizes from 24" x 48" to 36" x 72"



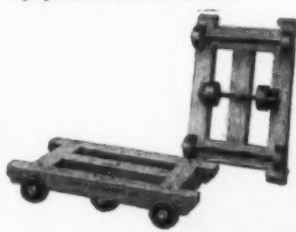
Commander STEEL-FRAME PLATFORM TRUCK

Fig. S2742-P—Tilting type, 8" diameter center wheels. Turns within own length. Sizes from 27" x 42" to 30" x 60"



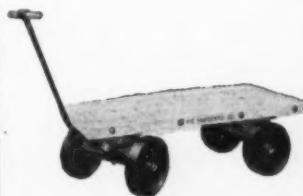
PIANO OR MACHINERY TRUCK

Fig. Y1112—Sturdy mortised construction with 1/2" tie rods at ends. Balances on two center wheels for easy handling of heavy equipment. Size 22" x 36"



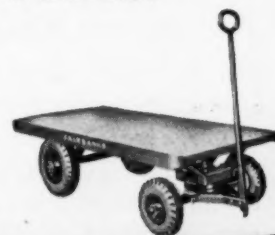
HEAVY DUTY WAGON TRUCK

Fig. 01459—Four ton capacity. Solid iron cross sills support hardwood strips bolted with 5/8" tie rods. Large fifth wheel. Size 36" x 72"



ALL STEEL METAL TRUCK

Fig. 01960-X—Continuous angle frame with round corners and solid steel plate platform. All welded construction. Sizes from 24" x 48" to 36" x 72"



Shown above are twelve headliners that rate top billing in the complete Fairbanks line of hand trucks and platform trucks for all kinds of duty, including the heaviest. There are many others also well worth knowing. Send for Catalog No. 50. The Fairbanks Company, 393 Lafayette St., New York 3, N. Y.; Boston, Pittsburgh, Houston.

American industry rolls on
fairbanks trucks



How many wipes in a wiper?
here's why "KEX" WIPING TOWELS
have hundreds of more wipes

One look at a KEX Industrial Wiping Towel tells you you're going to get greater performance. Just compare! Every square inch of a KEX Wiping Towel is usable wiping surface—no buttons, hooks, hard seams as with ordinary rags, no loose threads to catch in machinery. KEX Wiping Towels are soft and safe for delicate surfaces—yet tough enough for any job in the shop.

Every KEX Wiping Towel is uniform in size—easier to distribute and keep track of . . . uniform and BIG enough for any wiping job in the plant. And KEX Industrial Wiping Towels are always on hand—delivered as often as necessary—cleaned by a special high-heat process. No need for huge piles of inflammables taking up valuable space, creating a fire hazard.

Rent KEX Wiping Towels and Figure Your Profits

Why put up with the inefficiencies of sub-standard wiping materials another day? Install the KEX Wiping Towel system today, improve performance and save on wiping costs. There's nothing to buy, no expensive inventory—just a low monthly rental. For complete information, phone your local KEX representative, now—or write KEX National Service, 295 Fifth Avenue, New York 16, N. Y.

"KEX" NATIONAL SERVICE
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"KEX"
 REG. U.S. PAT. OFF.
 NATIONAL SERVICE
 A CALLAWAY MILLS PRODUCT
 INDUSTRIAL WIPING CLOTHS

(Continued from page 248)

Company, winner of a three-bottle hamper of fine liquors; and Les Close, superintendent of service of the Dictaphone Corp., who won a Parker 51 pen and pencil set.

General Sales Manager J. B. Epstein, Sterling Bolt Co., declared that "This was one of the most successful shows in which we have ever participated."

SLUG—NEWS

1 1 1

**CERTIFICATES AWARDED
 PURCHASING CLASS STUDENTS
 AT MILWAUKEE**

At recent meeting of the Purchasing Agents Association of Milwaukee at which eighteen students were awarded certificates, Joseph W. Nicholson, chairman of the association's Committee on Education (purchasing agent, City of Milwaukee), briefly reviewed the development of the evening courses in that city.

The courses were inaugurated in 1936 when the association completed arrangements with Marquette University in that city for a jointly sponsored single semester evening industrial purchasing course with college credit, he reported. The textbook used was Dr. Howard Lewis' book on "Industrial Purchasing", a revised version of which is now currently in use. The first class was conducted by Professor George W. Knick with the cooperation of visiting lecturers from the association's educational committee. Later it became necessary for the association to take full responsibility for the conducting of the course, and a special instructor was appointed, though Professor still assists in the work when his time permits.

A few years ago, at the request of students, the association sponsored an advanced course which took the form of studies and round table discussions of practical problems based not only on Dr. Lewis' problem book, but also on problems prepared by the class instructor.

Other forms of instruction include lectures by members and by visiting experts concerning purchasing procedures, manufacturing processes accompanied by exhibits, and also a series of sound films covering the mining of raw materials and the production and fabrication of semi-finished and finished products in steel, aluminum, copper, magnesium, plastics and castings; the hardening of steels; the use of electronic equipment, and other educational films.

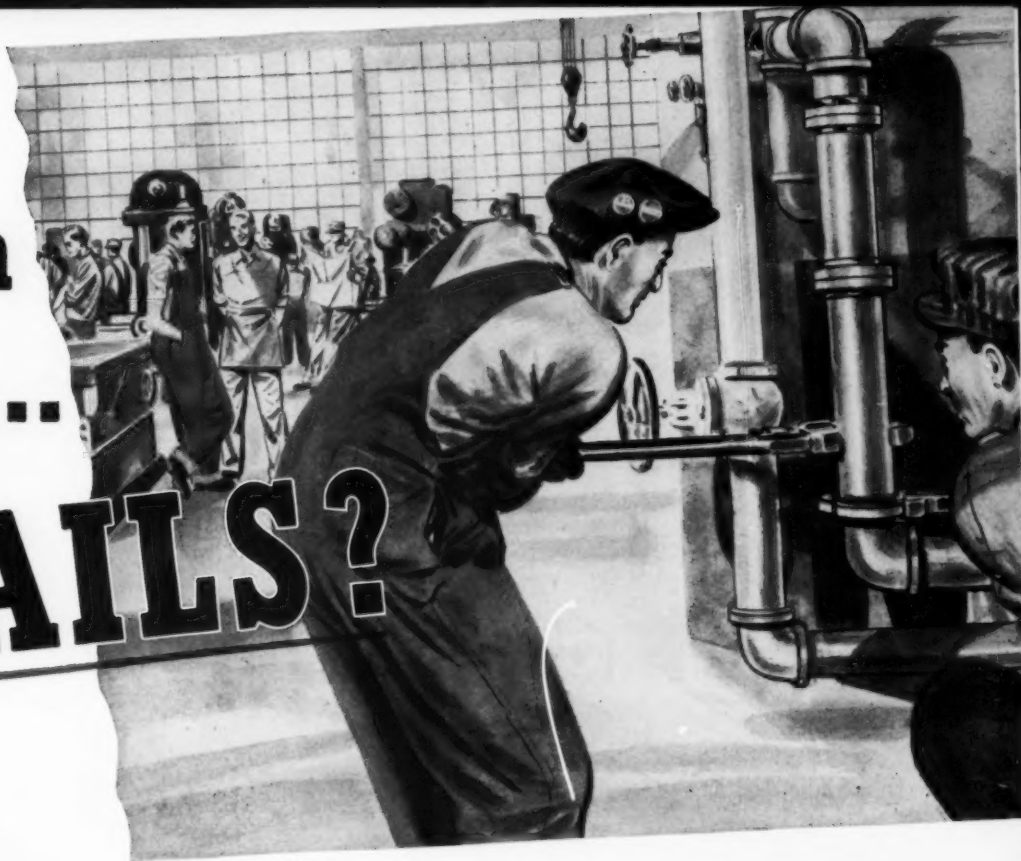
Mr. Nicholson stated that one of the most valuable and interesting films shown was that produced by the United States Steel Company which shows every process of the production of steel, from the mining of the ore to the manufacture of finished steel products.

Twenty-seven students enrolled last fall, and 25 enrolled in the spring class. Of the latter, 18 have completed the first semester's work, and the remaining seven will be required to take the first semester's work in order to qualify for the certificate which the association now awards

(Continued on page 254)

What Does a Fitting Cost...

IF IT FAILS?



Lost Production Time, Expensive Repairs

Minimized by **LADISH**

FORGED STEEL FITTINGS

The greatest cost of a fitting is the loss in production time that results when it fails. That is why it is sound economics to install Ladish Forged Steel Fittings. Their increased dynamic strength and ability to withstand repeated shocks, strains and stresses are a direct result of advanced forging methods and superior metallurgical controls.

Ladish controlled quality Forged Steel Fittings are your assurance of economical trouble-free operation . . . and higher profits!

Write for your Ladish Forged Steel Fittings Catalog, Vol. II.



Controlled Quality

FITTINGS DIVISION

LADISH DROP FORGE CO.

C U D A H Y • W I S C O N S I N (MILWAUKEE SUBURB)

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TO MARK PROGRESS



STRETCH YOUR WAREHOUSE

If you, like so many others today, are cramped for warehouse space, it's time you learned about **SUPERSTRONGS**.

SUPERSTRONG boxes — "Bound with Steel" — come to you in flat form, so that they occupy less than one-sixth of the space normally required. The resultant saving provides that warehouse space you need so badly—and just can't find.

Let us tell you how **SUPERSTRONGS** can more effectively handle your future requirements.



RATHBORNE, HAIR AND RIDGWAY COMPANY

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Is Activated Carbon the answer to your Adsorbent Problems?

*the most versatile
adsorbent for
solving problems of*

Air Conditioning

Solvent Recovery

Gas Purification

Deodorization

Decolorization

Fractionation

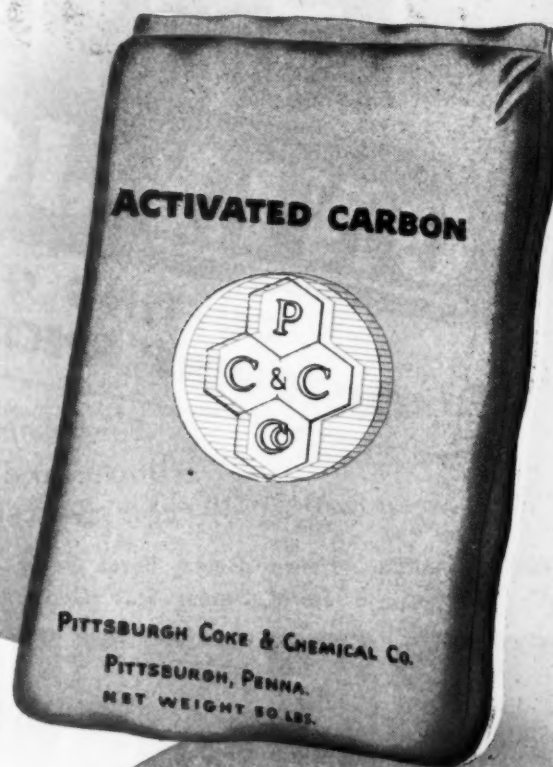
**Isolation of Organic
Chemicals or Drugs**

**Catalysis or
Catalyst Carriers**

The technology of modern manufacturing embraces, in ever increasing degree, application of the science of chemistry as well as the mechanical forces of physics. Likewise the accomplishment of a physical act through a chemical medium becomes more and more common practice. Solving problems of adsorption is a typical sample of this method.

Of the various adsorptive materials, Activated Carbon has proved to be exceptionally adaptable and versatile. It has high adsorptive capacity, is chemically stable, readily regenerated and can be made in a variety of forms and sizes to meet specific needs. Moreover it can be produced relatively economically on a tonnage basis for large scale applications.

If your manufacturing process requires the use of an adsorbent you should investigate the merits of Activated Carbon. Pittsburgh Coke & Chemical Company has the technical "know-how" and the production facilities to help you. Ask us to!



Pittsburgh Coke & Chemical Company

Grant Building

Pittsburgh, Pennsylvania

TRICO PROTECTION!

For more than 27 years, TRICO Electrical and Lubricating Devices have been safe-guarding Industry's valuable equipment in that approved manner whereby maximum life . . . sustained efficiency . . . and marked savings were profitably attained!

Achievements like this are the outgrowth of exhaustive research by TRICO engineers in developing products on a basis of sound design, rugged construction, and precision workmanship.

If you want the finest protection that money can buy . . . protection against unnecessary shutdowns and excessive production costs . . .

SPECIFY



TRICO FUSE MFG. CO.
MILWAUKEE 12, WISCONSIN

PERKINS'

ONLY JOB

... CUTTING GEARS TO CUSTOMERS' SPECIFICATIONS

For prompt action on gear estimates and gear production, communicate with us now.

PERKINS MAKES: Helical Gears, Bevel Gears, Ratchets, Worm Gears, Spiral Gears, Spur Gears, Ground Thread Worms

PERKINS

recision, Custom-Cut GEARS

PERKINS MACHINE & GEAR CO., SPRINGFIELD 2, MASS.

(Continued from page 250)

to students who complete the course in a satisfactory manner.

"Recently", said the report, "through the anonymous and generous gifts of one of the members of our association, it has been possible to conduct an annual contest in the form of a paper on an appropriate purchasing subject. Last year our association also contributed a year's subscription to the magazine Purchasing. Incidentally the winning paper was printed in that magazine. This year besides the two cash prizes, one of \$25. and the other of \$10., two subscriptions to Purchasing will be awarded, the first by our association, and the second by Editor Stuart Heinritz."

The winning paper and others of sufficient merit will be published in Purchasing. This year the subject of the contest is "Strengthening Relations between Purchasing, Engineering and Production Departments." Professor George W. Knick passes on the papers.

FIRST NATIONAL INSTRUMENT CONFERENCE AND EXHIBIT

The first National Instrument Conference and Exhibit will be held in the William Penn Hotel, Pittsburgh, Pa., September 16-20. The theme of the conference "Instrumentation for Tomorrow" is sponsored by the Instrument Society of America.

SURPLUS TRUCK SALES TOTAL 145,000

The War Assets Administration announced today that total surplus truck sales since V-J Day have amounted to 145,000 out of total declarations of 187,644.

These figures, WAA said, are exclusive of jeep sales which have been 6518 since December 1, 1945. Of the total disposals of jeeps, veterans have bought 5501.

Since the beginning of the year, WAA reported, veterans have received approximately 41 percent of surplus trucks of all types, purchasing 22,788 of a total offering of 51,676. The rest were sold to other priority claimants and qualified dealers.

Inventory figures as of April 30, 1946, disclosed that 42,956 trucks of all types were in surplus.

ANSWERS CRITICISMS OF ELECTRONICS EQUIPMENT DISPOSAL

Recent criticisms by Senator Alexander Wiley (Rep., Wis.) of surplus electronics equipment disposal were recently answered by Lieutenant General E. B. Gregory, Administrator of War Assets Administration, in a letter to the Senator.

General Gregory pointed out that the Surplus Property Act authorizes donations to educational institutions only if

(Continued on page 258)



Now...

PALMETTO PACKINGS

are easy to get!

In response to the nationwide acceptance of the world-famous PALMETTO Packings, Greene, Tweed & Co. has established a network of *strategically* located Stocking Distributors throughout the United States. Now, *particular* engineers can reach out for the quality and service they want . . . and get it in a jiffy!

No matter what your packing problem . . . call in the PALMETTO Distributor. There's one near you with a complete stock for all applications . . . he has the *correct* PALMETTO Packing for serving your needs—and for saving your money.

Write for representative literature and nearest distributor.

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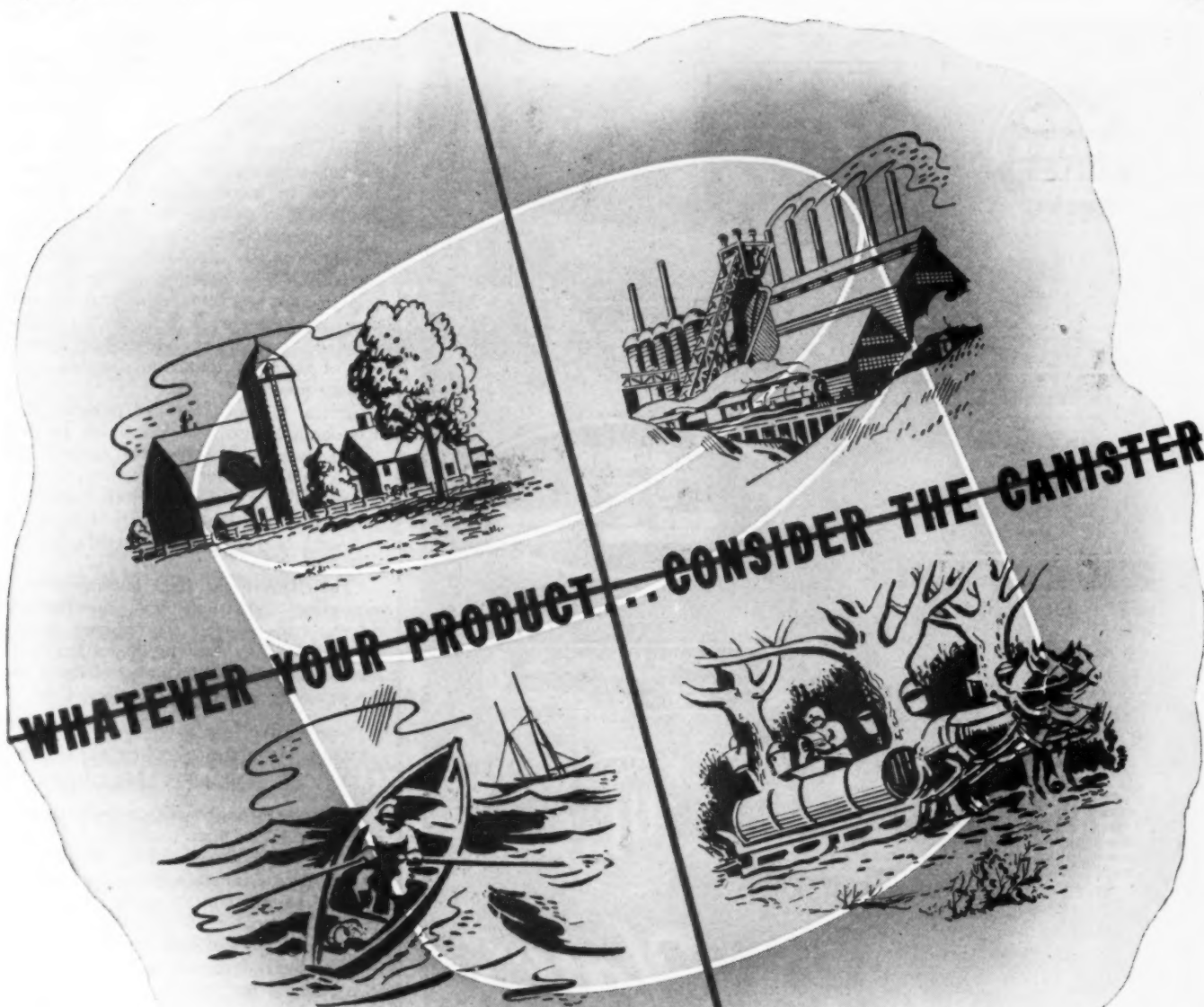
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Firm's address.....

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or covered with decorative paper for sales appeal — the canister combines a distinctive, identifying shape for your product, with down-to-earth strength and adaptability. Whether you pack marjoram or maple sugar — talcum or taffy, you'll save with safety by using the canister . . . proven in war — preferred in peace.

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NEW YORK REPRESENTATIVE
228 EAST 45th ST., NEW YORK 17, N. Y.
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SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

(Continued from page 254)

the property has no commercial value or if the cost of its care, handling and disposition would exceed the net return to the Government.

The General explained that the 20 percent set-aside for all priority claimants can be increased by WAA at any time to 100 percent but that to date the 20 percent provision "has enabled us to fill promptly all orders of priority claimants." He added that "experience over the past several months has indicated that requirements of priority claimants including veterans represent only 5 percent of the total amount of surplus electronic equipment."

General Gregory outlined in detail the manufacturer-agent system which, he declared, was under complete control by WAA in the matter of expenses. Cumulative costs for the entire electronics disposal program have totaled 34 percent and were only 25 percent for March, he said.

"The changed character of surplus and expanding provisions for distribution thereby made possible are reflected in the lowered monthly cost of operations and the increased quantities being diverted to the priority claimants," he concluded.

1 1 1

OFFER WIREBOUND CONTAINER SERVICE FOR NEW PRODUCTS

A service through which manufacturers will be able to plan packages for new products is being offered by the Wirebound Box Manufacturers Association despite the current shortage of veneer which is hampering box production.

The new plan will enable manufacturers to gear their designing and engineering of containers for future products to the development of the products themselves. When a new product is ready for marketing, the container designing will have been accomplished. This, in turn, will permit advance scheduling of container production, a safeguard during periods of critical container material shortages.

"Through this service, manufacturers need not wait until a product is completed to seek the container best suited to its packaging," L. S. Beale, secretary of the Association, declared. Because wirebound engineers will work along with the manufacturers' engineers, the wirebound containers can be altered and adjusted when necessary to meet changes in the design of new products as they develop."

Mr. Beale pointed out that the wirebound engineering service will save manufacturers time and money by minimizing the need for "trial and error" experiments in shipping to find the most practical package for their products.

1 1 1

FREE EDUCATIONAL FILM ON INDUSTRIAL AIR POWER

"Our Industrial Air Power" is the title of a new educational film on the many industrial uses of compressed air which is available for showing before students,

(Continued on page 260)

Quality Control Is Important in Forgings Too!

Most forging buyers recognize that the quality value of a part is, in the final analysis, the consistent degree of excellence that is more than skin deep.

The truth of this statement as it applies to forgings, is graphically pictured in the two illustrations of gear blanks shown at the right; each has been made to meet a specific requirement.

Grain flow and micro-structure control are extremely important in all gears—and quality control must be exercised to suit varying requirements.

The forged gear blank section pictured at left has been cycle annealed to provide greatest possible machinability (note the open lamellar pearlite structure in photomicrograph), and will be hardened after the teeth are cut. The forged gear blank section at right has been heat treated to provide maximum toughness (note the fine grain, quenched and drawn structure in photomicrograph), and will receive no further heat treatment after teeth are cut.

Both gears show the advantages of flow directional properties of grain structure at points of greatest stress, a quality that is available only from forgings.

It is well to remember that good external appearance does not tell the complete quality story in forgings, because it is impossible to visualize grain flow, structure, analysis, and the other important values that are present when intelligent quality control is exercised.

Today, quality control of forgings is a requirement of experienced buyers—assure yourself of this ultimate value by specifying forgings by Kropp for all highly stressed machine and equipment parts.

**DROP — UPSET — HAMMER FORGINGS
MACHINING — HEAT TREATING**



READY MACHINABILITY. This forged gear blank was cycle annealed to secure maximum machinability (original mag. 750X).

WEAR RESISTANCE. Forged gear blank heat treated for maximum toughness and wear resistance, yet be machinable (orig. mag. 750X).

KROPP FORGE COMPANY

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KROPP





7 THESE three simple, highly effective steps lead straight to tool satisfaction—

- **CELFOR DRILLS** . . . the original forged, hot twisted drills whose tough, lasting quality has never varied.
- **CELFOR REAMERS** . . . acknowledged leaders for 42 years, for their dependable excellence and low cost performance.
- **CELFOR CARBIDE CUTTING TOOLS** . . . new members of the Celfor family, to make the first complete line offered by a single manufacturer.

There it is—you get guaranteed tool quality, you make sure of low tool cost, you take the problem out of tool buying—when you standardize on Celfor.

Order from your distributor—specify Celfor—or write to us.



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**CLARK EQUIPMENT COMPANY
BUCHANAN, MICHIGAN**

Products of CLARK • TRANSMISSIONS • ELECTRIC STEEL CASTINGS
AXLES FOR TRUCKS AND BUSES • AXLE HOUSINGS • BLIND RIVETS
INDUSTRIAL TRUCKS AND TRACTORS • HIGH-SPEED DRILLS AND REAMERS
METAL SPOKE WHEELS • GEARS AND FORGINGS • RAILWAY TRUCKS

(Continued from page 258)

engineering societies and other groups. Among the sequences contained in this 25 minute, 16mm. sound-color film are: "Fundamentals of Air Compression," "Properties of Compressed Air," "How Different Types of Compressors Work" and "How Compressed Air is Used."

Film is available without charge on a loan basis. Write: Quincy Compressor Co., Quincy, Illinois.

1 1 1

U. S. STEEL CORPORATION BUYS GENEVA STEEL PLANT

The War Assets Administration Price Review Board has approved the sale of the \$190,000,000 Geneva Steel Plant, Geneva, Utah, to the United States Steel Corporation for \$47,500,000, the purchase covering plant and inventories.

1 1 1

"101 USES FOR WROUGHT IRON"

Numerous photographs depicting the utilization of wrought iron pipe, bars and flat rolled products in all branches of industry are included in the revised edition of "101 Uses for Wrought Iron," issued by A. M. Byers Company, Pittsburgh. Included among the newer applications pictured are radiant heating and automatic snow melting systems.

1 1 1

SHEARING FACILITIES ANNOUNCED BY FOLLANSBEE STEEL

Establishment of shearing facilities at the Pittsburgh and Rochester, N. Y. warehouses of the Follansbee Metal Warehouses Division of Follansbee Steel Corporation, is announced by J. W. Patrick, Jr., manager of warehouses for the corporation.

The warehouses also are expanding their lines of flat rolled products and are majoring on cold strip and sheets with stocks of electrical sheets to be added later, according to Mr. Patrick.

Coil slitters will be added at both warehouses as soon as equipment is available.

1 1 1

NEW ALUMINUM AND BRASS EXTRUSION PLANT

The Harvey Machine Co., Inc., for 30 years one of the leading manufacturing firms in the West, announces the opening of a \$10,000,000 plant for the manufacture of aluminum and brass extrusions at Torrance, Calif. The plant will be known as the Harvey Machine Co., Inc., Aluminum and Brass Division. Products will be extrusions for making screw machine products, plumbing fixtures, window frames and sashes, builders' hardware, furniture, truck bodies and numerous other metal products. Output will include bar stock, tubing, angles and special shapes. Plant was acquired from the Reconstruction Finance Corporation, and factory area exceeds 400,000 square feet.

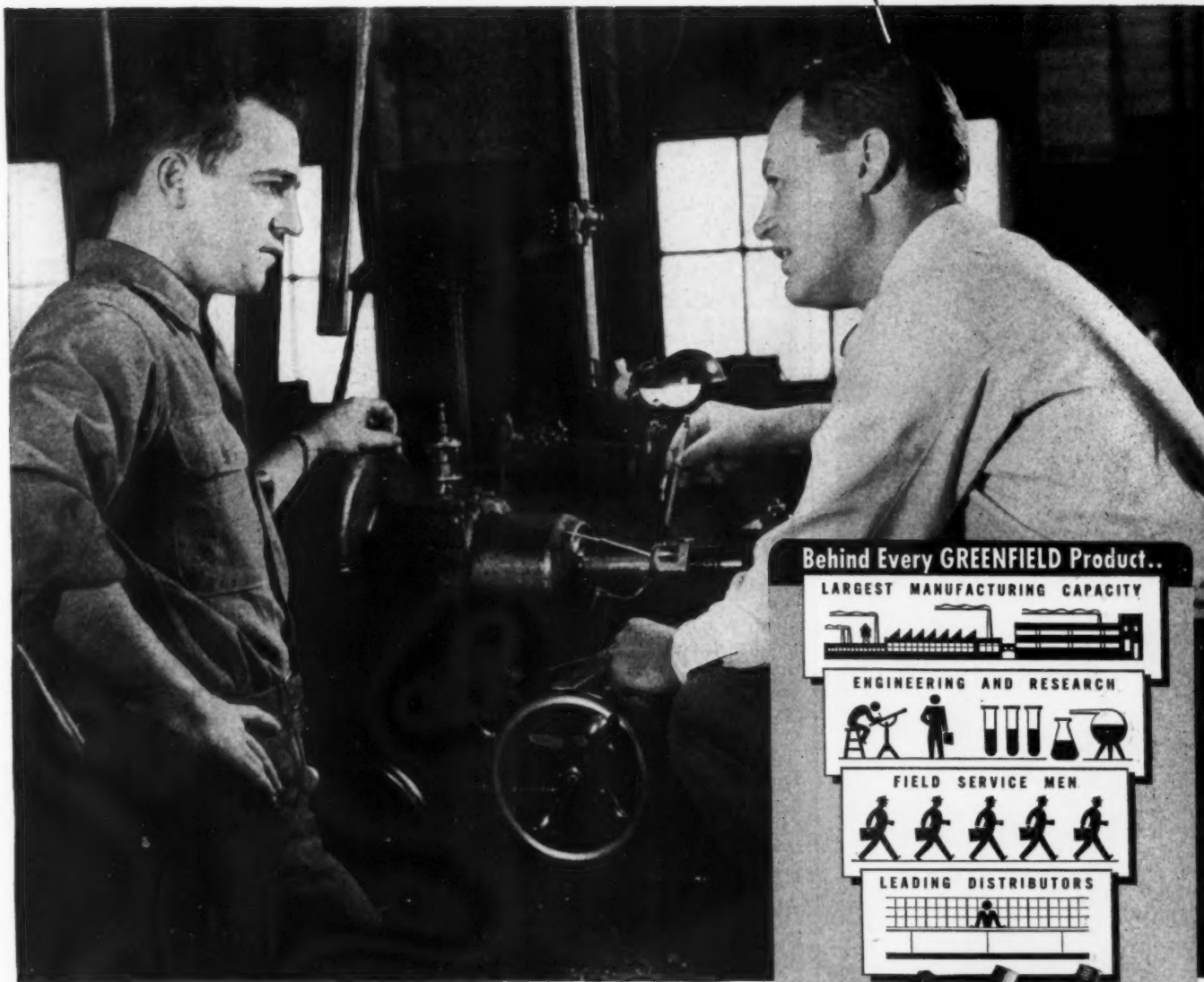
"And there's your answer, Jim"

In a few minutes, this threading operation will be cutting production costs by increased performance

The scene below is taking place every day in plants all over the country.

The man on the right is the "Greenfield Man"—a trained field engineer with the "know-how" to get the right answer to a threading problem, and the "show-how" to pass along this information so it can be put into practical use.

Is your plant making full use of "The Greenfield Man" in your territory? *If not, and if you have a threading problem, call the "Greenfield" Man through your "Greenfield" distributor today!*



GREENFIELD

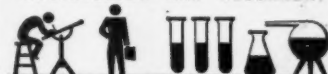
GREENFIELD TAP and DIE CORPORATION
GREENFIELD, MASSACHUSETTS

Behind Every GREENFIELD Product..

LARGEST MANUFACTURING CAPACITY



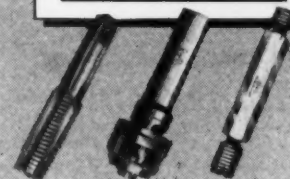
ENGINEERING AND RESEARCH



FIELD SERVICE MEN



LEADING DISTRIBUTORS



TANKS

Any size, any shape can be made to specification in Littleford's modern plants. Whether Plain Steel, Stainless, Stainless Clad, Monel, Inconel or Herculoy is needed, the same precision and skill is utilized to make a perfect product. If it's an Agitator Tank, Pressure Tank or a Plain Tank, it can be fabricated at low cost, because Littleford has 65 years experience in Tank Construction. Send blue prints today for an estimate.



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LITTLEFORD BROS., INC.
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Cincinnati 2, Ohio

Thickness and Weight of Standard Sheet Felts

Sheet felts are produced in a wide variety of styles, including both qualities and weights. As an economic simplification, however, the principal classifications and sizes have been standardized by the Felt Association, Inc. in a series of four different grades, each of which is listed in five different densities, as the basis of weight determination. All four densities in each grade are tabulated in a range of thicknesses from 1/4-in. to 3 in. This convention was approved by the Standardization Committee of the Association, September 27, 1945, as a tentative standard for one year.

carbonized and largely free of vegetable and other foreign material, and is of the class generally known as Spanish, Sub-Spanish, or Medium Fine Spanish, or their equivalent.

"Third grade standard sheet felt is composed of selected carbonized wools and/or uncarbonized wools and/or reused wools, principally U. S. Standard 56's, natural, grey or colored, and is of the class generally known as Mexican, or its equivalent.

"Fourth grade standard sheet felt is composed of wool and/or reprocessed wool, reused wool, and other animal or

THICKNESSES AND WEIGHTS OF STANDARD SHEET FELTS

Pounds Per Sheet Approximately 36 x 36 Inches
Surface at Stated Thicknesses

| F. A. Code Number ¹ | 12-S | 16-S | 20-S | 26-S | 32-S |
|--------------------------------|------------|------------|------------|------------|------------|
| Inches ² | Lb./Sq.Yd. | Lb./Sq.Yd. | Lb./Sq.Yd. | Lb./Sq.Yd. | Lb./Sq.Yd. |
| 1/4 | 3 | 4 | 5 | 6 1/2 | 8 |
| 3/8 | 4 1/2 | 6 | 7 1/2 | 9 3/4 | 12 |
| 1/2 | 6 | 8 | 10 | 13 | 16 |
| 5/8 | 7 1/2 | 10 | 12 1/2 | 16 1/4 | 20 |
| 3/4 | 9 | 12 | 15 | 19 1/2 | 24 |
| 7/8 | 10 1/2 | 14 | 17 1/2 | 22 3/4 | 28 |
| 1 | 12 | 16 | 20 | 26 3/4 | 32 |
| 1 1/4 | 15 | 20 | 25 | 30 3/4 | 40 |
| 1 1/2 | 18 | 24 | 30 | 35 1/2 | 48 |
| 1 3/4 | 21 | 28 | 35 | 40 1/4 | 56 |
| 2 | 24 | 32 | 40 | 45 | 64 |
| 2 1/2 | 30 | 40 | 50 | 54 1/2 | — |
| 3 | 36 | 48 | 60 | 64 | — |

¹ The numeral preceding the letter "S" signifies the surface density of the series, or weight of 1 square yard 1 inch thick.

² Sheets of 1/8 inch thickness are manufactured on order in Felt Association Code Nos. 20-S, 26-S, and 32-S.

³ Weights of sheets greater than 1 inch in thickness are equal to 19 times the thickness plus 7 pounds in the 26-S series only.

This standard is applicable to sheet felts fabricated individually from square batts of carded stock having the trend of fibres at right angles in adjoining piles and felted in a range of densities from 12 to 32 pounds per square yard of nominal 1 inch thickness.

The specifications for size, thickness and weights of sheets, together with tolerances are included as are specifications of quality based on principal fibre size, character, and treatment of the raw material before felting. The four standard grades defined are:

"First grade standard sheet felt is composed of highest quality white wools, principally U. S. Standard 64's, processed to be commercially free from vegetable matter, paint, and other foreign material, and is of the class generally known as Fine Spanish, or its equivalent.

"Second grade standard sheet felt is composed of selected unbleached wools, principally U. S. Standard 58's, usually

vegetable fibres, principally U. S. Standard 50's, or coarser, and is of the class generally known as Coarse Mexican, or its equivalent."

The weights correspond in general to the old trade designations "Extra Soft," "Soft," "Medium," "Hard" and "Rock Hard." These designations, though widely used, were never classified by definition. They are misleading on that account, and now are regarded as obsolescent.

The types and grades of sheet felts covered by this Standard are classified by a code consisting of the letter "S" preceded by a numeral to indicate consistency in terms of surface density and followed by a second numeral to indicate grade or quality classification.

Example: The designation is "26-S-1" indicates a sheet felt having a surface density or unit weight of 26 pounds per square yard of nominal 1 inch thickness, and of first grade quality; 26-S-3, a sheet

(Continued on page 266)

*Portable...
Easy to use*

M.S.A. Gas Instruments

—for determining
toxic or explosive
gas hazards
on the job



M. S. A. HAND OPERATED CARBON MONOXIDE INDICATOR

Sensitive, accurate, simple and easy to use, this readily portable Indicator directly measures toxic concentrations of carbon monoxide rapidly and accurately.

Light in weight and safe to use even where flammable gases are present, the Indicator employs a hand-operated pump with built-in pressure regulator and indicates percentage of carbon monoxide in air on direct reading meter, with scale range from 0 to .15% carbon monoxide. Meter can be read directly to .005% and estimated to .001%. No outside power source is employed, permitting complete freedom of action.



M. S. A. EXPLOSIMETER MODEL 2

Designed for day-in and day-out testing of gas or vapor in air mixtures for explosibility, this instrument features easy one-hand operation and can be used by anyone to check suspected atmospheres without special training. To use the instrument requires only the setting of a single control and operation of an aspirator bulb. Concentrations of combustible gas, if present, are immediately readable on the indicating meter. Powered by standard flashlight batteries in separate compartment, the instrument is easily maintained in the field. One-piece flow system, easy reading meter, built-in filter chamber, and other valuable features make this instrument an accepted leader in its field.



M. S. A. HYDROGEN SULPHIDE DETECTOR

This hand-operated detector enables quick, accurate detection and measurement of low but dangerous concentrations of hydrogen sulphide in air—a unique device, providing a simple means of detecting and accurately measuring the hazard at the working places. Gas samples are drawn through chemical detector tube by an aspirator bulb; the chemical changes color in direct proportion to the amount of H_2S in air, and the concentration is then read directly on a graduated scale, in amounts ranging from .0025% to .04% by volume. The detector is furnished complete with a dozen detector tubes in a sturdy leather carrying case.

Write for Descriptive Literature

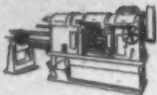
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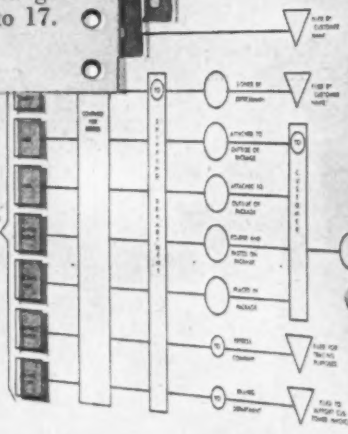
TORONTO, MONTREAL, CALGARY, VANCOUVER, NEW GLASGOW, N. S.

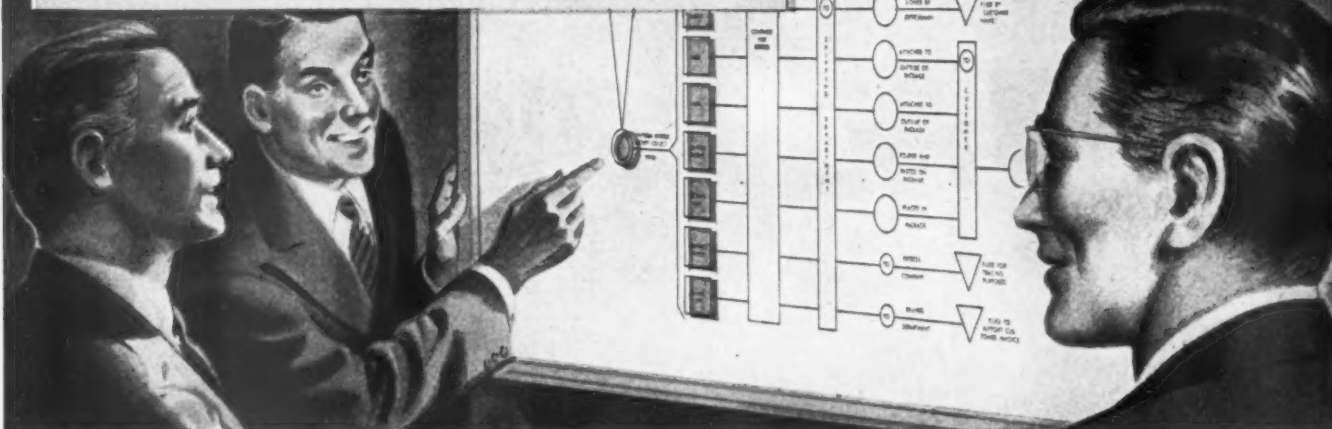


Less shipping "wait" at Cone Automatic Machine Co. as record system is re-gear

Smoother shipping operations, fewer delays result from practical overhaul of packing, shipping, and invoicing record system of leading machine tool manufacturer by *Standard Register's exclusive methods*. 4 separate writings reduced to one. 30 time-consuming operations cut to 17.

PROCEDURE FLOW CHART





And Standard Register's exclusive procedures save most where record systems cost most

IT'S IN THE WRITING and handling of forms—and in *how they function*—that waste finds the best hiding place. And it's here that Standard Register's scientific approach so frequently reveals sources of savings that escape the usual office or systems study. Savings which multiply themselves all over again through better management control.

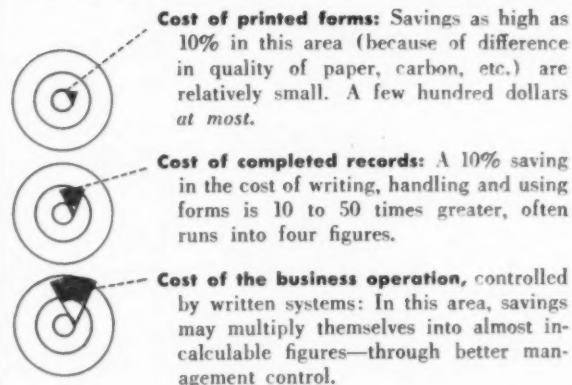
In predetermined basic steps—including analytical flow-charting of existing methods—Standard Register's exclusive approach turns a revealing spotlight on ineffective control procedures, work-making form design, time-consuming methods of writing and handling forms.

And in a minimum time, without upsetting office routine, Standard Register is ready with specific recommendations—the kind that have effected five and six figure savings for many leading companies.

Would you like additional facts about Standard Register's business systems—and the Formcraft-Designed

Kant-Slip continuous forms that furnish you with better *working papers*? Write for Formcraft Digest D-190 which explains the above system.

PROBLEM: FIND THE AREA WHERE SAVINGS COUNT MOST



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PRODUCTION
EXECUTIVE - *Office*

Monthly FORMS FORUM

Two Practical Systems used by Two Outstanding Companies—Sylvania System installed in Twenty of the Company's Plants

PURCHASING Agent A. O. Horne of Frederick Stearns & Company, Division of Sterling Drug Inc., Detroit, Mich., declares that the accompanying simple forms have proved quite practical, and furnishes the following information concerning the use of each:

Purchase Requisition: Issued by the Production Control division from schedule prepared by the Planning department. The Purchasing department may adjust the amount depending on type of material and market conditions.

Analytical Report: Practically all material must meet certain specifications and therefore must be approved by the Control division before being released for use.

White and buff Stock Record Cards: These combine to keep the stock record of each item purchased for manufacture.

(Continued on page 270)

| Sample No. | | Received | Reported | Assay No. |
|----------------|---------------------|----------|----------|-------------|
| Sample | Actual Size 5" x 8" | | | Book No. |
| Type of Sample | | | | Reported to |
| Description | | | | Batch Yield |
| Identity | | | | Standards |
| Appearance | | | | |
| Assay | | | | |
| | | | | Remarks: |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Analyst: | | | | Approved: |

Specifications Must be Approved by Control Division

| PURCHASE RECORD | | | | | | CONTRACTS | | | | | | | | | | FREDERICK STEARNS & CO. FORM 50751-10 ATONE VISIBLE RECORDS, INC. CH-CA-12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------------------|----------|--------|-------|---------------------|-----------|-----------|----------|--------|-------|---------|------|-----------|----------|--------|---|---------|------|---------------------|-------|--------|------|---------------------|-------|--------|--|--|--|--|--|--|------|------|------|------|-----|------|------|------|------|------|------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| DATE | CONT. NO. | QUANTITY | SOURCE | PRICE | EXPIRES | DATE | CONT. NO. | QUANTITY | SOURCE | PRICE | EXPIRES | DATE | CONT. NO. | QUANTITY | SOURCE | PRICE | EXPIRES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10" wide x 6" Deep | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| APPROVED SUPPLIERS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Invoice Record continued on reverse side | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SPECIFICATIONS - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%;"> <thead> <tr> <th>ITEM</th> <th colspan="12">FOLLOW UP</th> </tr> <tr> <th></th> <th>JAN.</th> <th>FEB.</th> <th>MAR.</th> <th>APR.</th> <th>MAY</th> <th>JUN.</th> <th>JUL.</th> <th>AUG.</th> <th>SEP.</th> <th>OCT.</th> <th>NOV.</th> <th>DEC.</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </tbody> </table> | | | | | | | | | | | | | | | | | | ITEM | FOLLOW UP | | | | | | | | | | | | | JAN. | FEB. | MAR. | APR. | MAY | JUN. | JUL. | AUG. | SEP. | OCT. | NOV. | DEC. | | | | | | | | | | | | | |
| ITEM | FOLLOW UP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | JAN. | FEB. | MAR. | APR. | MAY | JUN. | JUL. | AUG. | SEP. | OCT. | NOV. | DEC. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Purchase Record serves as contract record, cost record, approved suppliers, and record of purchase specifications — see lower part.

YOUR BUSINESS RECORDS ARE WORTH A FORTUNE!



Records are the reins that control your business. Aside from their inestimable value as evidence of property, productivity and progress, the mechanics of making and keeping them represents a sizable investment. Are you risking that investment by neglecting *paper*—the foundation of every record keeping system?

Records essential to the current and future conduct of your business need maximum protec-

tion against the ravages of time and constant handling. You can be sure of complete protection only when you use paper of WESTON quality, made expressly for record keeping of strong, durable cotton fibres. Insure your investment in records and record keeping right from the start. Ask your supplier to show you WESTON papers that will serve you long and well at a trifling fraction of your total record keeping cost.

BYRON WESTON COMPANY, DALTON, MASSACHUSETTS

Keep records worth keeping
on **WESTON Papers**

Weston

Makers of Papers
for Business Records



(Continued from page 262)

felt of the same surface density but third grade quality. Either of these qualities will have a mean weight of 13 pounds per square yard in $\frac{1}{2}$ inch thickness, or 6.5 pounds per square yard in $\frac{1}{4}$ inch thickness, since this classification applies to sheets of the same unit weight and quality in all thicknesses, and thickness must be separately specified following the class designation.—*Felt Facts*

1 1 1

NO CHANGES IN WASTEPAPER BALING DIFFERENTIAL

No change is contemplated in the existing \$5 a ton baling differential applicable to the ceiling prices of ten grades of wastepaper, the Office of Price Administration announces.

On these ten grades, ceiling prices since September, 1944, have been \$5 a ton higher when the paper is packed in bales of 500 pounds or more than are the ceilings for the same wastepaper otherwise packed or loose.

The ten grades are: No. 1 Mixed Paper, No. 1 News, Overissue News, Old Corrugated Containers, Extra Manilas, Mixed Books, No. 1 Heavy Books and Magazines, No. 1 Mixed Ledger (colored ledger), No. 1 White Ledger and Mill Wrappers.

There have been widespread rumors in the trade of late that OPA was planning a change in the baling differential for these wastepaper grades, possibly taking the differential off altogether, or allowing the differential for bales of any size or weight.

The foregoing is issued to set such rumors at rest.

OPA said that the rumors were probably prompted by a complaint against this baling differential that had been scheduled for hearing on May 27, 1946, in the Emergency Court of Appeals at Chicago. The complaint was withdrawn however, prior to the hearing.

OPA pointed out that the stipulation that bales must be 500 pounds or more to qualify for the \$5 baling differential on these ten grades of wastepaper had been suggested by wastepaper dealers and consuming mills as being the most practicable minimum weight.

In recent consultations with the industry, OPA was advised not to make any change at this time. Numerous telegrams and letters also have been received protesting against any change being made.

1 1 1

REMINGTON RAND CHANGES

Ten new branch managers were recently appointed to Remington Rand's Adding - Bookkeeping - Calculating Machines Division it was announced by Wm. A. Rhodes, General Sales Manager.

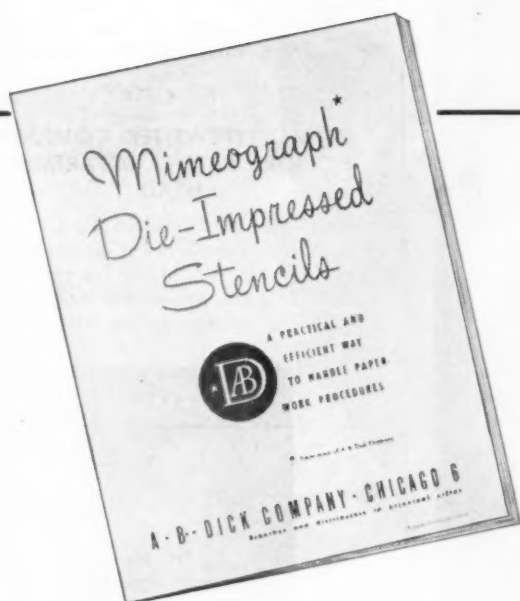
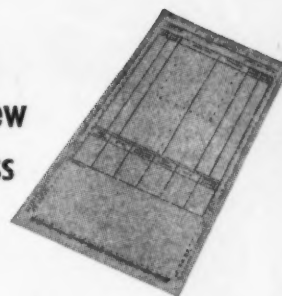
Among the recent promotions made from within the company were Mr. C. A. Thompson to be Newark Branch Manager, Mr. L. C. McAlpine, Jr. for Milwaukee, G. C. Eppler for St. Louis, E.

(Continued on page 268)

How you can hire a . . .

Production expediter
Control simplifier
Error cutter
Time-and-paper saver
**Right-hand man for the
methods manager**

all in
this new
stubless
stencil



**Send for this new
free folder on
Mimeograph
die-pressed stencils**

How can you *know* that Mimeograph die-pressed stencils can speed up your factory paper work and simplify control of methods, systems, and factory routines?

Because Mimeograph die-pressed stencils have done it for so many leading manufacturers these past production-laden years!

Tested and proved in actual factory use, Mimeograph die-pressed stencils are ready now

to go to work for you, producing your paper work in a single writing, more quickly, more accurately, and at lower cost—with clear, black-and-white copies that will retain high readability even when exposed to hard shop handling.

Clip and mail the coupon today for the whole story on this moneysaving, production-speeding use for that Mimeograph duplicator you now have—or will be getting soon.



Mimeograph duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

COPYRIGHT, A. B. DICK COMPANY

A. B. DICK COMPANY, Dept. P-746
720 West Jackson Boulevard, Chicago 6, Illinois

Send me a copy of your new folder, "Mimeograph Die-Pressed Stencils."

NAME

COMPANY

STREET

CITY STATE



The Difference Between

THIS

and

THIS

CAN EASILY
PAY FOR
A YEAR'S SUPPLY
OF
COLUMBIA *Classic* RIBBONS

FAULTLESS APPEARANCE

*Always Attracts Attention —
CLASSIC Written Letters Command It!*

Dignified, impressive, "Classic" typing puts them at the top of the file basket — for *immediate attention!*



(Continued from page 266)

L. Lee for Jacksonville, G. E. Nelson for Omaha, P. E. Davis for New Haven, E. N. St. Peter for Manchester, N. H., E. C. Johnston for Hartford, W. S. Wilcox for Springfield, Mass., and D. C. Ellanson for Toledo.

In addition to long experience in the sales and managerial field of the Remington Rand Company, most of the new managers have taken additional training in accounting procedures, business machine operation, application of special forms and other types of advanced study. Several are graduates of the company's Training School held regularly at Tona-wanda, N. Y., while all have specialized in advanced study in their special fields.

1 1 1

ROYAL TYPEWRITER COMPANY HONORS PATENT DEPARTMENT HEAD

On behalf of President E. C. Faustman, Royal Typewriter Company, Vice-President M. V. Miller recently presented a gold watch for faithful and outstanding service during his 25 years



William Graepel, Recipient of
Royal 25-year Watch

with Royal to William Graepel of the Patent and Experimental Department.

The ceremony, which took place in the offices of Patent and Experimental Head Lewis Myers, was attended by members of the department. After the presentation of the watch, his co-workers honored him with a gold watch chain.

Mr. Graepel joined the Company on March 14, 1921 in the capacity of a tool and experimental worker. Since that time he has been successful in developing and bringing to a point attachments for typewriters or inventions being part of the typewriter itself. He is the co-inventor of many typewriter patents and also has patents issued on his own.

1 1 1

WOOD OFFICE FURNITURE INSTITUTE ANNOUNCES NEW HALLMARK

Adoption of a new hallmark to identify products of member manufacturers is announced by the Wood Office Furniture Institute, Washington, D. C. The mark will have an embossed "W" symbolizing wood on a field of gold, resting on a base having dovetail ends. The distinctive emblem will be fixed to desks and chairs made by Institute members, in addition to their own individual labels.



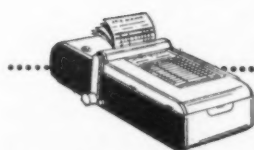
There's more to it than meets the eye. Away your clothes go, soiled and rumpled. And a few days later they're back—clean and looking like new. But what you don't see are the multiple operations involved. The receiving—instruction—billing—delivery... and the countless forms that speed and co-ordinate these operations.

It's like that in every business today. Routine operations are essential—and to handle them with maximum speed, efficiency and accuracy, correct forms—such as UARCO's—are vital.

Take a look at the forms you're using—estimate their number. Perhaps several could be combined. Probably the use of fewer—and prop-

erly designed forms—would cut handling costs, eliminate errors and speed work.

Then, after this preliminary check, call in your UARCO representative. His careful analysis of your repetitive routine operations will open your eyes to the importance of forms designed for efficiency. You'll see how UARCO forms can speed your work—bring accuracy and control to all phases of your business. So call your UARCO representative. There's absolutely no obligation for his study and improvement suggestions. Call or write, today. UARCO INCORPORATED, Chicago, Cleveland, Oakland. *Offices in All Principal Cities.*



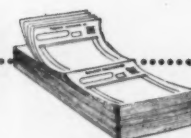
AUTOGRAPHIC REGISTERS
AND REGISTER FORMS



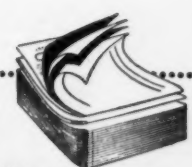
SINGLE SET
FORMS

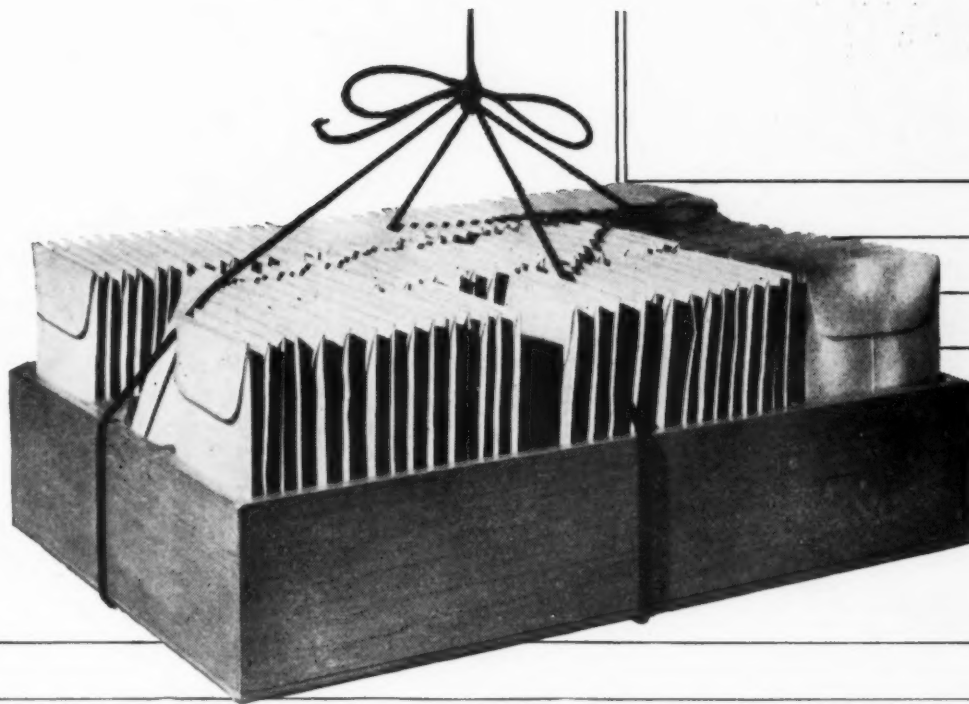


BUSINESS FORMS



CONTINUOUS-STRIP FORMS
FOR TYPEWRITTEN AND BUSINESS MACHINE RECORD





Heavy, heavy, what hangs over?



Little brown pay envelopes. Fat ones.

Overtime filled them. Office overtime. Nine to five wasn't enough. The work wasn't finished. People must stay and when they stay they get paid. *Overtime* hangs gloomily over this man and his budget.

Can anything be done to avoid the nagging, unprofitable round of after-hour duties that by rights ought to be cleaned up in daylight?

Moore Business Forms, Inc., can pare clerical overtime to the bone — and has done so in business after business.

Moore looks at your business forms with unprejudiced eye. If forms are too complicated, Moore can simplify. If they multiply work, Moore revises to reduce work. Moore combines, rearranges, puts in a word here, a new arrangement there. The record, in

hours and dollars saved, has been convincing to companies large and small, all over America.

Any business, of any size, can benefit from Moore's unequaled experience in this field. For information, get in touch with the nearest Moore division, as listed below, or its local office. *Moore stands ready to supply you with everything from a simple sales book to the most intricate multiple-copy forms.*

AMERICAN SALES BOOK CO., INC., NIAGARA FALLS AND ELMIRA, N. Y.
 PACIFIC MANIFOLDING BOOK CO., INC., EMERYVILLE; LOS ANGELES, CALIF.
 GILMAN FANFOLD CORP., NIAGARA FALLS, N. Y.
 COSBY-WIRTH MANIFOLD BOOK CO., MINNEAPOLIS, MINN.
 MOORE RESEARCH & SERVICE CO., INC., NIAGARA FALLS, N. Y.
 SOUTHERN BUSINESS SYSTEMS, INC., ORLANDO, FLA.
 MOORE BUSINESS FORMS, INC. (New Southern Div.), DALLAS, TEX.; ATLANTA, GA.
 In Canada—Moore Business Forms, Ltd., succeeding Burt Business Forms, Ltd., Toronto
 Western Sales Book Co., Ltd., Winnipeg and Vancouver
 National Sales Check Book Co., Ltd., Montreal

MOORE BUSINESS FORMS, INC.

The SPRINGHILL TRIO sounds the right note in paperboard printing



It's easy to understand why printers show such marked enthusiasm for the SPRINGHILL Trio—White Tag, Manila Tag and White Index Bristol.

Made from 100% virgin bleached sulphate pulp, these paperboards offer brilliant appearance and unusual strength together with excellent pressroom performance—either in letterpress or offset printing.

These advantages, plus excellent folding qualities, have won for the SPRINGHILL Trio national acceptance for index cards, postcards, die cuts, tickets and menus, job tickets, hospital cards and similar uses.

We wish we had sufficient stocks to supply all those who find the SPRINGHILL Group of papers best for their heavy-duty needs. We are using all our operating facilities as the world's largest maker of papers in our efforts to increase available quantities and to meet current demand.

International Paper Company,
220 East 42nd St., New York 17, N. Y.

**INTERNATIONAL
PAPERS**

*for Printing
and Converting*





Old Town

**RIBBONS
CARBONS
Duplicating
Supplies**

*For those
who prefer the best*

BROOKLYN 17, N. Y.



**TENSION
ENVELOPES**

TRADE MARK REG.

For Every Business Use



DUO-POST ENVELOPE
LETTER AND CATALOG ARRIVE TOGETHER

TENSION ENVELOPE CORP.

FIVE FACTORIES
SELLING DIRECT TO THE USER

New York 14, N. Y. * Minneapolis 15, Minn.
St. Louis 3, Mo. * Des Moines 14, Iowa
Kansas City 8, Mo.

(Continued from page 272)

9-102

SYLVANIA ELECTRIC PRODUCTS INC.

40 BOSTON STREET, SALEM, MASSACHUSETTS

DATE _____

8 1/2" wide x 7" deep

PURCHASE ORDER No. 272702

SHOW THIS NUMBER ON ALL
INVOICES, PACKING SLIPS,
CORRESPONDENCE AND
PACKAGES.

REQUISITION NO. _____

TERMS _____

SHIP _____

VIA _____

PRIORITY _____

PRICE _____

| ITEM | QUANTITY | DESCRIPTION | PRICE |
|---|----------|-------------|-------|
| <p>PLEASE ENTER THIS ORDER SUBJECT TO ALL TERMS AND CONDITIONS APPEARING ON THE FACE AND REVERSE SIDE HEREOF.</p> <p>COMPLETE PACKING LIST MUST ACCOMPANY EACH SHIPMENT.</p> <p>SYLVANIA IS NOT RESPONSIBLE FOR GOODS DELIVERED EXCEPT ON WRITTEN ORDERS.</p> <p>ACKNOWLEDGE ORDER AT ONCE GIVING DELIVERY DATE.</p> <p>The undersigned purchaser certifies, subject to the provisions of Section 35 of the United States Criminal Code, in the seller and to the War Production Board, that, to the best of his knowledge and belief, the undersigned is authorized under applicable War Production Board regulations or orders to place this delivery order, to receive the goods ordered for the purposes for which ordered, and to use any proceeds arising or derived therefrom or which the undersigned has placed on this order.</p> | | | |

BY _____

PURCHASING DEPT.

formation on the requisition is in the same sequence as the same information on the purchase order. This facilitates typing and reduces errors of transcription.

Purchase Order: Our Purchase Order has been designed to serve as a combined purchase order and receiving report. After the purchase order has been typed (nine copies) copies 1, 2, 3, 8 and 9 are distributed as follows:

1 — Vendor; 2 (green) — Purchasing Department; 3 (blue) — Accounting De-

partment; 8 (purple) — Requisitioner's copy; 9 (black) — priority copy. Copies 4, 5, 6 and 7 are sent intact with carbon interleaved to the receiving department. Distribution is as follows: 4 — (brown) Receiving Report-Accounting Department; 5 — (red) Receiving Report-Receiving Department; 6 — (orange) Receiving Report-Purchasing Department; 7 — (green) Receiving Report-Move Ticket.

CAR NO. _____

VIA EXP. ☐ PAR. ☐ POST ☐ WT. _____ PPD ☐ COLL. ☐ CHS. ☐

PURCHASING DEPT. 272702

NO. ACCEPTED _____ NO. REJECTED _____

REC'D COMPLETE ☐ PARTIAL ☐ DEL. ☐

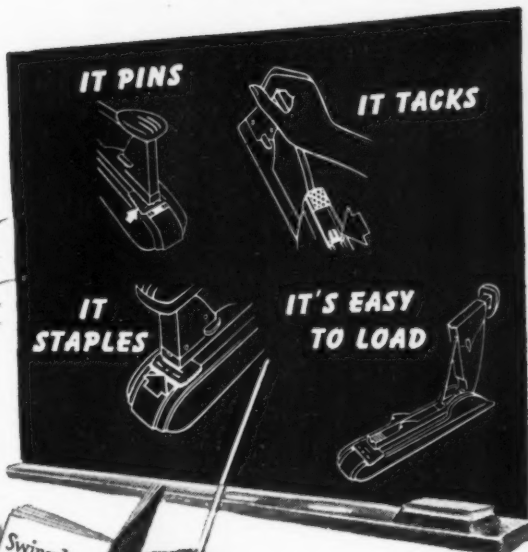
REQUISITION NO. _____

PURCHASING DEPARTMENT FOLLOW-UP

| ITEM NO. | QUANTITY ORDERED | QUANTITY RECEIVED | DATE | RECEIVED BY | REMARKS |
|----------|------------------|-------------------|------|-------------|---------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |

Purchasing Department copy of Purchase Order — Insert shows Receiving Record on back of form
(Continued on page 280)

*"Let this be a Lesson
to you!"*



"BUSINESS TODAY calls for speed," I tell a convention of office workers, "but you can't get it without office equipment.

"Now, take the SWINGLINE Stapling Team! SWINGLINE's No. 4 Stapler loads fast because its patented Swing-Back head makes it *easy to load*—and it *pins* and *tacks* as well as staples! Its teammate—SWINGLINE's 100% ROUND WIRE No. 4 Staple—penetrates better, doesn't clog with excess glue, *because* it's made of 100% ROUND WIRE. SWINGLINE's Stapling Team spells speedy, trouble-free performance—and that spells efficiency!"

I get a big hand—they're all agreed that plenty of Speed is what they need!

Your office needs SWINGLINE, too. See the SWINGLINE Stapling Team at your stationer's.

ALL SPEED Products Sold Through Dealers Only.

SPEED PRODUCTS COMPANY, INC., Long Island City 1, N.Y.

100% ROUND WIRE
STAPLES ARE BEST
FOR ALL STANDARD
STAPLERS



Swingline

NO. 4 STAPLER AND STAPLES

WORLD'S SPEEDIEST STAPLING TEAM

The image shows two overlapping Postindex Purchase Record forms. Form #1 is on top, and form #2 is underneath it. Both forms have columns for 'MATERIAL', 'QUANTITY', 'PRICE', and 'REMARKS'. Form #1 has handwritten entries: '1 1000 Steel Rods 1/2" Round', '2 5000 " " 1/2" Round', and '3 4000 " " 1" Round'. Form #2 has similar entries: '1 1000 Steel Rods 1/2" Round', '2 5000 " " 1/2" Round', and '3 4000 " " 1" Round'. The forms are designed for tracking purchases and inventory.

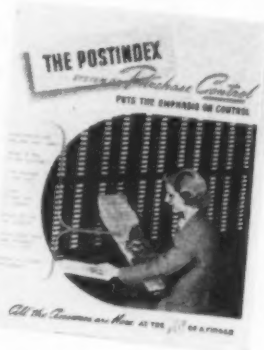
WHAT? WHEN? WHERE? HOW MUCH?

This POSTINDEX PURCHASE RECORD with Follow-Up gives the answer instantly

These twin Postindex forms are used in two departments of a leading industry. #1 records invoices and shipments for the Purchasing Department enabling them to determine at a glance cost, shipping dates, quantities, etc. #2 is used in the Progress Department and tells instantly when material is required, when shipments were received and in what quantities. Follow-up is easy and practically automatic.

You can get complete information on the multiple advantages of POSTINDEX records by sending for this new booklet—"The POSTINDEX SYSTEM of PURCHASE CONTROL." It's FREE. In addition to illustrating and describing in detail a number of POSTINDEX records used in the Purchasing Departments of leading industries, it also explains the operation of the POSTINDEX System of visible index files. If the form you need is not already among the 20,000 forms in the POSTINDEX Form Library, we will design a form to exactly fit your needs.

Write for this helpful booklet today. Address
Department P, Postindex Company,
Jamestown, N. Y.



POSTINDEX
Visible Index
FILES

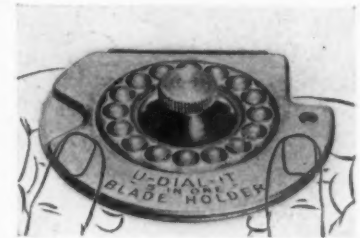
Manufactured by **POSTINDEX COMPANY**

Division of **ART METAL CONSTRUCTION CO., JAMESTOWN, N. Y.**

NEW SAFE, SAFETY-RAZOR BLADE HOLDER

Ever since somebody discovered that the safety razor blade was excellent for cutting a multitude of things besides the hair on his face, people have promiscuously used this keen edge outside the razor. And many have been the casualties thereof, too!

At last, however, a holder is announced by H. R. Basford Co., San Francisco 7, Calif., that is said to provide complete



U-Dial—Its five cutting positions make it a scraper, slicer, ripper, clipper or trimmer

safety and also boosts the commonplace razor blade to the top of the heap of versatile tools.

U-Dial-It is the new blade cutter that quickly takes care of any cutting job around the home, office, workshop, school or camp. It consists of three parts, made of aluminum, plus a double edge razor blade. The five cutting positions to be dialed make it a scraper, slicer, ripper, clipper or trimmer. To select any one of these cutting positions, it is necessary only to loosen the knob turn the top plate (dial) until the desired number shows under the window. Then tighten the knob and do your cutting. In the closed position, U-Dial-It may be carried in the pocket with absolute safety.

1 1 1

COMPRESSION AND FLAT OPENING FEATURE CATALOG BINDER

The announcement of a new catalog binder, named the Tri-Lock, frees buyers of loose leaf catalog binders of the necessity of choosing between compression and flat opening. Formerly it was necessary to select a binder which held its pages securely under compression, but provided no flat reference convenience—or a non-compression binder equipped with rings, prongs, or telescopic posts, which provided no security to its contents.

The unique construction of the Tri-Lock binder has overcome these handicaps to efficient cataloging. The touch of a button changes this rugged compression binder (which holds sheets so securely that the full binder may be lifted by a single leaf) into a perfect flat reference binder. It opens flat and stays open at any point without holding. Bleed pages can be used to add sales punch as no special provision need be made for wide margins—full visibility is provided, clear to the binding edge. The control button also unlocks the binder for speedy change in contents.

The Tri-Lock binder has been designed and engineered to meet many spe-

cial loose leaf catalog requirements. Any practical sheet size, capacity and number of posts are available, all combining the much desired compression and flat opening features. The Tri-Lock may be had in stiff or flexible construction, bound in genuine or imitation leather in a wide range of colors and grains. Its economical price is within reach of all users of loose leaf catalogs.

Tri-Lock is the newest member of the re-styled, re-engineered line of Remington Rand catalog binders which include ring, posts, prong and thong binders for every purpose. Special attention has been given to the use of standard punchings and spacings so that one printing may be served by a wide variety of covers to meet functional and budget requirements.

Information regarding this new line of binders may be obtained from any Systems Division Office of Remington Rand Inc., or by writing to the Systems & Methods Research Department, Remington Rand Inc., 315 Fourth Avenue, New York 10, N. Y.

Sidelights of Business

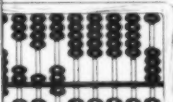
BANK OF ENGLAND CHAIR.....

THIS TYPE OF WOOD CHAIR, SAID TO HAVE ORIGINATED AT THE FAMOUS BANK, HAS BEEN POPULAR IN BUSINESS OFFICES FOR MORE THAN A CENTURY. ACCORDING TO THE WOOD OFFICE FURNITURE INSTITUTE.



FIRST CALCULATING MACHINE....

THE ABACUS, WITH BEADS ON STRINGS, FOLLOWING THE DECIMAL SYSTEM, WAS USED FOR THOUSANDS OF YEARS FOR FIGURING.



STENOGRAPHER: 1000 B.C. -

MOST MERCHANTS IN EGYPT AND OTHER ANCIENT COUNTRIES COULD NOT WRITE, SO THEY DICTATED TO THOSE WHO COULD. THE CLERKS IN EGYPT SAT ON FLOOR WITH LEGS CROSSED.



53 KINDS OF OAK....THERE ARE 53 KINDS OF OAK TREES IN THE UNITED STATES, BUT ONLY A FEW ARE CONSIDERED HIGH ENOUGH QUALITY FOR OFFICE DESKS AND CHAIRS. OAK AND WALNUT ARE THE MOST POPULAR WOODS USED IN OFFICE FURNITURE.



EMULSIFIER FOR MASS CLEANING OF OFFICE MACHINES

Emphasizing speed and safety in the mass-cleaning of office machine equipment, Oakite Products, Inc., 54 Thames St., New York, N. Y., introduces a new water-soluble emulsifier designated as Oakite Composition No. 99.

The new cold solvent-type compound, non-toxic, non-flammable, is said to remove grease, oil and ditto-ink deposits from typewriters, adding machines and similar office machines without damaging paint, decals, rollers and other rubber parts. Normal hazards of the ordinary solvent-type cleaners are avoided. Machines are soaked in tank of cold solution, rinsed with hot water, then air dried before re-oiling.

Free service report giving detailed instructions on the application and uses of Oakite Composition No. 99 is available.



The proof of the carbon paper is in the punching

To most P. A.'s, all carbon paper must look alike. But there's a vast difference—and that difference can best be proved by actual use.

Especially today, when prices are up and quality counts more than ever, F. S. Webster challenges comparison with any other line. Tell us your needs, and we'll provide samples *at our expense*. Then you be the judge.

F. S. Webster Company makes a complete line of carbon papers (including the famous Micrometric) and typewriter ribbons; duplicating carbon papers and accessories; carbon paper ribbons for photo-offset work; ribbons and carbons for Elliott-Fisher, Addressing, Adding and International Business Machines. Consult your nearest dealer or write to F. S. Webster Co., 7 Amherst Street, Cambridge 42, Massachusetts.

WEBSTER'S

Micrometric Carbon Papers and Typewriter Ribbons

WHAT'S THE LIFE OF AN INSURANCE POLICY?

10 years? ... 20 years? ... a lifetime?
And the paper must be as white ... the
printing as legible as the day it was
issued. Ask your printer how you can
be sure of this kind of permanency for
every type of document. Paper is his busi-



ness—he knows it intimately. As an expert he
will almost certainly call your attention to

**Rising
Parchment**

- ✓ 100% rag ✓ Super Opaque ✓ 4 weights
- ✓ Distinctive unglazed parchment finish

When you want to **KNOW** ... go to an expert!

*Rising
Papers*

Rising Papers

Ask your printer ... he **KNOWS** paper!

Rising Paper Company, Housatonic, Mass.



PULL-FREE Pencil Carbon

You don't have to tussle with this pencil carbon. It yields at a touch. Use as sharp a pencil as you wish. Bear down as hard as you like. Then finger the carbon and see it come free—quickly, cleanly. Old Dutch PULL-FREE Pencil Carbon is specially processed to prevent clinging and sticking. ... One more feature highlighting the better quality that has characterized Old Dutch products for nearly 50 years.

ASK YOUR OLD DUTCH CUSTOMER ENGINEER

WATERS & WATERS BRANCH, 511 Locust St., St. Louis
BURLINGTON, N. J. SAN FRANCISCO, CAL.

MADE TYPEWRITER BRANCH MANAGER AT WASHINGTON

The appointment of Colonel Thomas J. Shyrook, Jr., now on terminal leave from the Army of the United States, as typewriter branch sales manager in Washington, D.C., has been announced by Remington Rand Inc.

Colonel Shyrook first became associated with Remington Rand when he joined the systems division of that company, in 1926. He served as assistant district manager in Philadelphia, as safe cabinet field specialist, and as branch sales manager in Baltimore, Newark, and Philadelphia before he was called into the service in February, 1941.

1 1 1

DAUTEL MADE MANAGER OF DIEBOLD WHOLESALE DIVISION

Diebold, Inc., of Canton, Ohio, announces the appointment of Walter H. Dautel as manager of their Wholesale Division. Mr. Dautel formerly was con-



W. H. Dautel, Manager—Wholesale Division
Diebold, Inc.

nected with Remington Rand for 28 years as sales manager of the Loose Leaf Division, during which time he organized a subsidiary company, Baker-Vawter Inc., functioning as vice-president and sales manager.

1 1 1

SEE LITTLE DUPLICATION OF ELECTRICAL EQUIPMENT ORDERS

Today's expanded buying of electric motors, generators and controls represents little or no duplicating of orders for equipment which will later be cancelled, in the opinion of district managers and field sales engineers of The Reliance Electric & Engineering Company, who met recently in Cleveland for their first general sales conference since Pearl Harbor.

Major factors in securing current new business are the urge on the part of many manufacturers to expand quickly the production of products regularly made before the War and the growing realization of plant managers that without replacing present equipment they cannot obtain the speeds now feasible with new materials.

A shift in production by some concerns to new or substantially redesigned products is offered as another reason for the present buying of new motor driven

(Continued on page 280)



One For the Books

Easy on the eyes...easy to write on with either pen, pencil or machine...Atlantic Ledger is certainly one for the books. Its smooth durable surface...a surface, by the way, which takes erasures without trouble or mess...is one that makes bookkeeping definitely easier.

Economical, in spite of its high quality, Atlantic Ledger will satisfy you and your bookkeeping department every time you order it. Comes in white, buff, and Eye Comfort.

Atlantic Ledger

MADE BY
EASTERN CORPORATION
BANGOR, MAINE

TO MAKE PULP OF "OPERATION OLYMPIC" MAPS

Twenty-two million new Army maps, prepared for "Operation Olympic," the invasion of Japan which was rendered unnecessary by that country's surrender, but still carefully guarded in Hawaii, have been sold by the Department of the Interior's Surplus Property Office on an agreement that they will be shredded and made into paper pulp.

The maps were bought by the Great Eastern Packing and Paper Stock Corporation of New York City, which paid \$5,040 for the 800 tons of specially-prepared paper.

Disposal of the maps without destroying them presented the Surplus Property Office with a difficult problem since they are still considered of military value. Moreover, they are chemically treated to prevent the ink from dissolving and are located in Hawaii where no facilities exist for utilizing them.

The corporation buying the paper will return it to the States and has agreed to see that all secret information is completely destroyed.

NEW MAIL SCALE FOR OFFICE USE

A modern mail scale specifically designed for office use is announced by Deteco Scales, Inc., 1 Main St., Brooklyn, N. Y. It has a fully automatic com-



"Target" pointer of Post-O-Meter shows correct weight and postage on dial and chart

puting mail chart covering all classes, air-mail, and parcel post up to 4 lbs. "Target" pointer shows correct weight and postage on easy-reading dial and chart. Quick-stop device stops swinging of pointer instantly—saving valuable time. Scale is known as Post-O-Meter Jr. Delays due to under-postage will be obviated by its use. A two-color brochure is available on request.

NEW LAMP FOR TYPISTS

Following a lapse of several years owing to war conditions, the makers of the Copy-Right Copyholder announces they are again manufacturing a special fluorescent copyholder lamp for typists only. The new lamp has several notable improvements over the pre-war model. It can be easily attached by anyone directly to all front-vision, line-by-line

(Continued on page 282)

Be your own Form-Designing Expert



Send for these 5 Useful Tools!...FREE!

With these free Hammermill helps you can design time- and money-saving business forms exactly fitted for the job you want them to do:

- 1. Hammermill plastic Form Layout Rule.** Carries inch and pica printer's scales, also pica and elite typewriter scales.
- 2. Layout Sheet** (either typewriter pica- or elite-spaced) for designing forms to exact size and shape required.
- 3. Idea-book, "How to Design a Business Form."** Gives economical sizes, suggestions on when and how to use forms, form-designing helps, etc.
- 4. Revised Manual lists** all Hammermill papers made today... grades, colors, sizes, weights, finishes... conveniently indexed.
- 5. Hammermill Form-Designing Kit.** Contains: 26-point check-list and printing Specification Sheets.

Use the 26-point check-list to test efficiency of your present forms. Whatever is needed, this set of practical tools will guide you. Make your task easy. Choose paper for your forms from the NEW Hammermill Bond line... the new bright white and 14 pleasing colors. Send the coupon for the Form-Designing material and the sample book of Hammermill Bond.

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A DIRECTORY OF AMERICAN INDUSTRY

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(Continued from page 281)

copyholders. Copyholder and lamp thus become a neat, sturdy, compact unit, leaving all desk surface free and clear. This fixture takes a 15 watt fluorescent tube and diffuses soft, heatless, glareless and shadowless illumination where it is most needed by typists—over copy-work, typewriter and both sides of the desk. Known as the Copy-Right Lamp, it enables stenographer-typists to work in complete comfort and with maximum speed, efficiency and accuracy, notwithstanding bad overhead lighting conditions (or no overhead lighting at all) during the day, in the evening or late at night. Printed matter available from Copy-Right Mfg. Corp., 53 Park Place, New York 7, N. Y.

1 1 1

C.P.A. REPORTS ON COLLEGE TEXTBOOKS

There will be an estimated new supply of 15 and a half million college textbooks for 1946, according to a survey made by the Civilian Production Administration. Since estimated requirements for the 1946 school year are 14.4 to 16.1 million textbooks for an anticipated student enrollment of 1,600,000 to 1,800,000, no assistance to obtain paper need be granted textbook publishers, CPA announced today.

New books to be printed in 1946 will be slightly less than 13,000,000. There will also be available one million textbooks remaining from the Army Special-

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TRI-PLY Combines RED & GRAY RUBBER

NO. 399 TRI-PLY—The leading typists' eraser.

CENTER PLY—Soft gray ink eraser to erase single letters;

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ized Training and the Navy's V-12 programs and in addition there may be a substantial surplus remaining from the United States Armed Forces Institute programs. Further deficits are expected to be met by withdrawal of one and a half million books from publishers' inventories.

Nearly eight million of the new books will become available before the opening of the school year in September, the survey indicated. Another five million will be manufactured by the end of December, 1946. This should meet the demand in physical units. However, choices as to particular textbooks, authors, or editions at the time they are desired may be limited, CPA pointed out.

Situation Less Critical

The survey was requested by leading educational and general book publishers, most of whom anticipated an increase of 40 per cent in college textbook demand this coming academic year. 1946 new production will be one-third more than in 1945, and with the Army and Navy surplus, the situation seems much less critical than had been expected.

The Civilian Production Administration anticipates continued shortages of college textbooks and some delays in supplying educational institutions and their students with the textbooks which they would normally use. However, the survey shows that the situation will be much less critical than has been indicated by some preliminary appraisals of the college textbook supply and demand for the academic year 1946-47. In view of the critical shortage of all paper and current heavy demands on the capacity of book printers and binders, it is not believed that special assistance can be given to the making of textbooks without creating even more serious problems in the paper and printing industries.

Surplus textbooks transferred to the Veterans Administration will be channelled to veterans through the educational institution where the veteran is enrolled under government sponsorship, the War Assets Administration reports. The Library of Congress will distribute the books to educational institutions, which will in turn handle distribution to veterans.

1 1 1

CONTINUOUS BLEACHING TO INCLUDE ELECTRONIC CONTROLS

Electronic and other new and improved industrial instruments will become major factors in the successful operation of continuous bleaching systems now being installed in several of the larger textile mills of the country, according to Karl Selden, Jr., textile sales engineer, Brown Instrument division of Minneapolis-Honeywell Regulator Company.

Pilot plants and research laboratories, said Mr. Selden, have already employed such industrial instruments for successfully recording and controlling temperatures and other variables at numerous points in the continuous bleaching system which, he added, is replacing former klier or batch bleaching methods.



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THE WATERMARK
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quality guarantee

● Yes, you'll have one of the finest letterhead papers available if the watermark answers these three questions. Dictation, English, Old Badger and Anniversary Bonds are cotton fibre papers made by Fox River.

● The finest papers are made from cotton fibres... the more cotton fibre, the finer the paper. They're made by craftsmen, like the men at Fox River, who have been making fine cotton fibre papers since 1883.

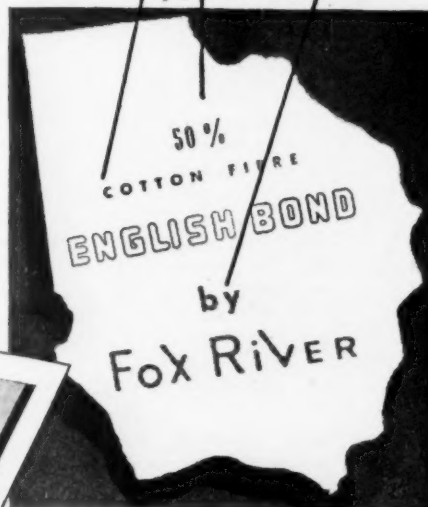
● Ask your printer, lithographer or engraver about Fox River papers. He'll be glad to recommend the paper with the correct cotton fibre content for each business need.

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PERSONALITIES

in the NEWS

A. C. Curran has been appointed General Purchasing Agent of American Chain & Cable Co., Inc., and Associate Companies, with headquarters at the executive offices in Bridgeport, Conn. Mr. Curran has



been with the company since 1914 and has been continuously in the general purchase department, having been assistant general purchasing agent for the past several years.

Frederick C. Esser, formerly Purchasing Agent of the Bryant Electric Company, a subsidiary of the Westinghouse Electric Corporation, has returned to Bloomfield, N.J., as Purchasing Agent of the Westinghouse Lamp Division.

T. Addison Clohosey, Lamp Division Purchasing Agent for 37 years, has been appointed Purchasing Consultant, and Harry D. Hanafus, who has been a section supervisor in the Lamp Division purchasing department since October, 1944, was named Assistant Purchasing Agent.

Mr. Clohosey last September received the Westinghouse Order of Merit, highest honorary award bestowed by the company on its employees for outstanding performance. He is a past president of the National Association of Purchasing Agents. Mr. Esser, who was graduated from Seton Hall College in South Orange in 1929, joined Westinghouse as a buyer in its Lamp Division headquarters. He was a director of the Purchasing Agents Association of Connecticut from 1942 to 1945.

E. W. Beck, manager of Purchases for General Petroleum Corporation, Los Angeles, Calif., has been appointed Assistant Purchasing Agent for the Socony-Vacuum Oil Co., New York, General's parent company. He is succeeded by Paul J. Whitley, formerly assistant manager. James Ross succeeds Mr. Whitley as assistant manager of purchases. Mr. Beck has been with General Petroleum since 1923 when he was employed as a clerk, and entered the purchasing department in 1926, becoming assistant chief clerk,

buyer, price clerk, and assistant manager, and becoming Manager of Purchases in 1937. He is a former president of the Purchasing Agents of Los Angeles.

E. E. Hanson, assistant General Purchasing Agent of the Southern Railway System, Washington, D. C., was promoted to General Purchasing Agent with headquarters remaining at Washington, effective June 1st, succeeding L. H. Skinner who has been named assistant vice president. **C. R. Whitaker** succeeds Mr. Hanson. Mr. Hanson entered the service of the Southern as a Clerk at Washington in August 1901. After serving in various clerical and secretarial positions



E. E. Hanson

he was promoted to chief clerk to the superintendent of Motive Power at Macon, Ga., and in March 1913 he was advanced to Purchasing Agent of the Georgia Southern & Florida Railway (a Southern Railway System line). In March 1920 he was promoted to Assistant Purchasing Agent of the Southern Rail-



C. R. Whitaker

way, System, and to Assistant General Purchasing Agent in January 1927. Mr. Whitaker entered the service of the Southern Railway as a clerk at Washington in October 1923. He was promoted to Assistant to General Purchasing Agent in January 1930, and advanced to Assistant General Purchasing Agent in January 1934.

Stanley W. Cochrane has been named Director of Purchasing for the Briggs Manufacturing Co., Detroit, Mich., succeeding the late W. J. Cleary. He has been a Briggs employee since 1926 and



was one of the company's key officials in its \$698,000,000 war production program. Since 1940 he has been sales manager and comptroller of the Briggs turret division which produced power gun turrets for the B-17 Flying Fortress. Mr. Cochrane joined Briggs as a cost accountant, and in 1931 he was transferred to Briggs Motor Bodies, Ltd., the Briggs subsidiary in Dagenham, England, and at the outbreak of war in Europe in 1939, was in charge of sales at that plant. Returning to the United States in 1940, Mr. Cochrane assisted in setting up the production of Sikorsky Navy plane wings in the Briggs Conner plant before moving over to the turret division.

John P. Moran has been appointed Procurement Director of the Pennsylvania Central Airlines, with headquarters at the National Airport, Washington, D.C. He succeeds Jack Kurtz, who has resigned to enter business on his own account. Mr. Moran comes to his new position with a record of long and successful experience in purchasing, starting with the Standard Oil Company in New York City some twenty years ago. During the war he served as Assistant to the Procurement Director of Republic Aviation Corporation at Farmingdale, Long Island, and for the past several months has been associated with Frederick Loeser & Company of Brooklyn, N.Y.

Frank B. Baker, in charge of purchases for all plants of the Pullman-Standard Car Manufacturing Co., Chicago, has been elected vice president of the company. He formerly was a clerk in plant of Haskell & Barker at Michigan City,

(Continued on page 286)

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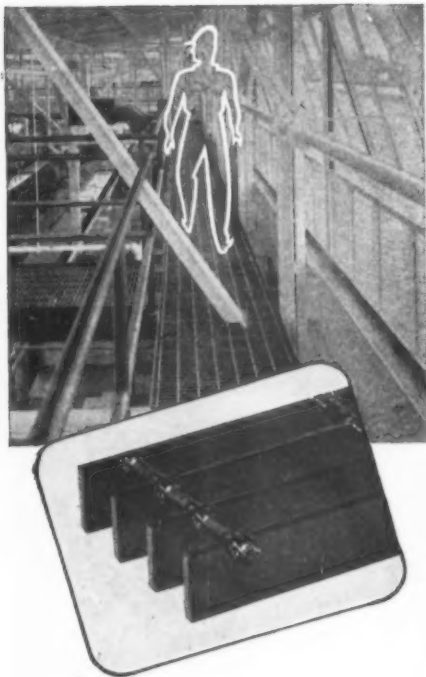
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and bridge decking...

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Continued from page 284

Ind., rising from record clerk to assistant purchasing agent. When the Haskell & Barker Company merged with the Pullman Car Mfg. Co. in 1922, he was named supply agent at the Chicago plant. He was named General Purchasing Agent of Pullman-Standard Car Mfg. Co. in 1934.

B. D. Seidel succeeds Harry M. Hubbard as Purchasing Agent for the Ohio Crankshaft Co., Cleveland, Ohio. Previous to the war he was a purchasing agent in the Cam and Crank Division of the company, from 1939 to June 1943, and recently was released from the Armed Services, having been with the Air Transport Service for 16 months.

H. J. Richards, first secretary of the Purchasing Agents Association of Cleveland, and one of its organizers, and for the past 26 years Northern Ohio District Manager for the Bussmann Mfg. Co. of St. Louis, retired as of July 1st. He was the association's first National Director when it became affiliated with the N. A. P. A.

Harold V. Cusick succeeds Dave Rodricks as Purchasing Agent for the Earle M. Jorgensen Company, Oakland, Calif., the latter having been promoted to the position of assistant district manager. Mr. Rodricks has been with the company 13 years. Mr. Cusick has been with the company three years, previous to which he was with the Columbia Steel Company for nine years.

Don A. Magill, Purchasing Agent for the City of Glendale, Calif., has been appointed first vice president of the California State, County and Municipal Purchasing Agents Association, succeeding James McCool, resigned, formerly assistant purchasing agent of the County of Los Angeles.

O. G. Rice has been named Purchasing Agent and office manager for the Marine & Industrial Supply Co., Seattle, Wash.

Walter J. Fry has been named Purchasing Agent and traffic manager for the Imperial Candy Co., Seattle, Wash., succeeding Carl Gleason, resigned.

Edgar P. Gilmore has been named Assistant Purchasing Agent of Ohio State University, Columbus, Ohio, succeeding George H. Seibert, resigned. He has been technical assistant and purchasing agent for the Ohio State University Research Foundation since 1942.

Gerrit W. Trap has been named City Purchasing Agent, Muskegon, Mich., succeeding Miss Alma C. Peterson, who passed away recently. Miss Peterson had been Purchasing Agent for 22 years.

Colin R. Grant has been appointed Purchasing Agent for the Michigan Seamless Tube Company, makers of cold drawn seamless steel tubing, South Lyon, Michigan.

Harry Sheevers, Purchasing Agent, Refined Syrups and Sugars, Inc., Yonkers, N. Y., was recently paid tribute by officers of the company for his ability to procure materials during the war years. They emphasized that "during World War II when materials were so very scarce, notwithstanding the difficult job, Harry never failed us once." Mr. Sheevers is now rounding out his 40th year with the refinery. He became Purchasing Agent for Refined in 1937, when that company took over the plant, previously having been connected with Consolidated Products Co., The Spreckels Sugar Corp., and the Federal Sugar Refining Company with whom he began in 1906 as a shipping clerk.

E. L. Roseberry has been named Purchasing Agent for Goble Aircraft Specialties, Inc., Flushing, N. Y. For the past



year and a half Mr. Roseberry served as purchasing agent for Hazeltine Electronics, Corp., and previous thereto was chief of stores of Pan American World Airways, Atlantic Division, with direct responsibility of the main stores department at LaGuardia Field, New York, and the stores departments of 22 foreign bases.

Henry F. Woulfe succeeds Charles Luckman as president of Lever Brothers Company's Pepsodent division, the latter being elected president of the Lever Brothers Company. Mr. Woulfe, previously Pepsodent's vice president and general manager, joined the company in 1927 as Purchasing Agent.

F. T. Spinard is now Purchasing Agent for the Narragansett Machine Co., Providence, Rhode Island. This is supplemental to announcement made in May issue of PURCHASING in which his name was incorrectly spelled.

H. J. Grace is Purchasing Agent for the Jefferson Lake Sulphur Co., Inc., Brazoria, Tex., which commenced steaming operations at its Long Point properties in Fort Bend County, Texas.

Leo C. Russo, Director of Purchases for the C. D. Kenny Division, Consolidated Grocers Corporation, has been elected a vice president of that division.

Woodrow D. Anderson has been named assistant Purchasing Agent for the Isaacson Works, Seattle, Wash., succeeding Harry Benson, resigned.

Continued on page 288

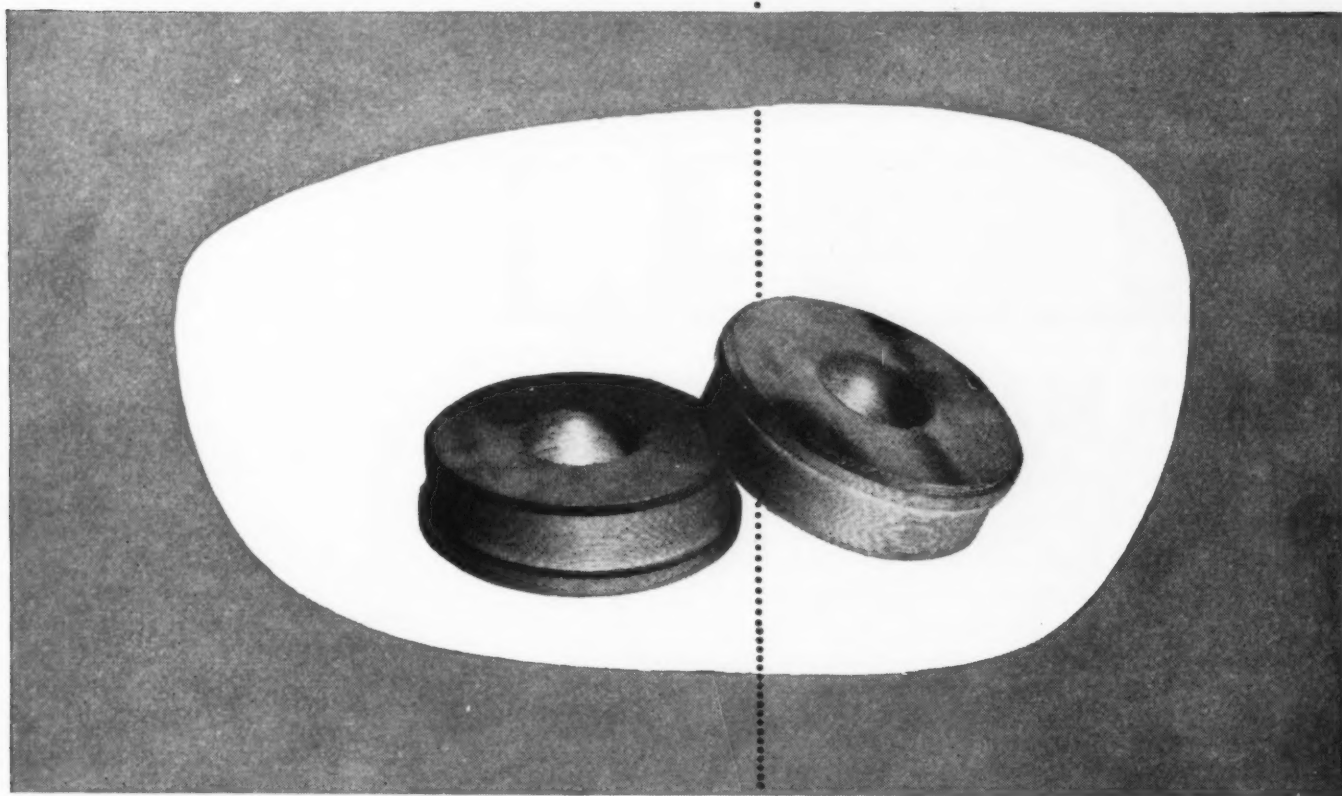
Case Histories from the RICHARDSON files

PRODUCT RE-DESIGN

Problem: To re-design bearings on bottle vending machine. Must be non-corrosive to withstand moist atmosphere. Bore of finished part must serve as a non-lubricated bearing, while the outer periphery must resist abrasive action.

Solution: Using Laminated INSUROK, Grade CG, Richardson Plasticians furnished precision plastic bearings having the required characteristics. For Grade CG INSUROK contains a high percentage of natural graphite, has excellent strength qualities, resists abrasion and the action of moisture.

The versatility of The Richardson Company is at your service no matter what the plastics application may be. Through the correct use of INSUROK, both *molded* and *laminated*, Richardson Plasticians have shared in the rapid growth of many industries. Tell us your plastics problems . . . and let us help you solve them!



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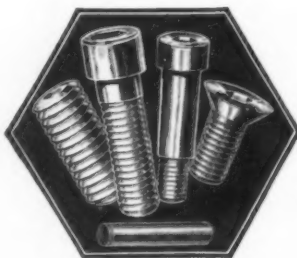


ALLEN

SOCKET HEAD CAP SCREWS

In tooling jigs and fixtures these are the universal screws, either for powerful clamp set-ups or fine, precise adjustments. Their strength of head and accuracy of thread are achieved by Allen *pressure processes* that eliminate weaknesses caused by cutting the stock.

The above view was taken in the toolroom of Douglas Aircraft Company, Santa Monica, Calif. In small tooling jigs like the one above and equally in the heaviest welding fixtures, "Allens" have the *clamping-power* to depend on! Threads are accurate to a high Class 3 fit, for a maximum of frictional holding-power in the tapped hole. Internally engaging hexagon keys are obviously the handiest of wrenches for this work.



Allen Hex-socket Screws and "Tru-Ground" Dowel Pins supplied only through Industrial Distributors in all centers.

THE ALLEN MANUFACTURING COMPANY
HARTFORD 1, CONNECTICUT, U. S. A.

Continued from page 286

Eugene R. Butcher, re-order buyer, Walker-Jimieson, Inc., Chicago, recently discharged from the Army Signal Corps., has resumed his duties as head of the re-order buying department.

Stuart F. Heinritz, Editor of *Purchasing Magazine*, addressed the monthly luncheon meeting of the Purchasing Officers of the U. S. Department of Agriculture at Washington, D.C., May 20, on the topic "Basic Values of Purchasing". Representatives of the purchasing division of the Department of the Interior were present at the meeting, besides some 50 members of the Agriculture purchasing staff. James Scamahorn, Chief of the Division of Purchases, Sales, and Traffic, presided.

Ralph E. McCormack, Purchasing Agent, Eagle-Picher, Joplin, Mo., is also president of the Consolidated Supply Com-



pany, the 20th birthday of which was recently celebrated at Picher, Okla., with the help of more than 200 Southwestern industrial leaders.

Harry J. Halliday, formerly Assistant Purchasing Agent for the Jeffrey Manufacturing Company at Columbus, Ohio, was recently appointed Purchasing Agent. He has been with the company for 35 years.

S. A. Taylor, Manager of Purchases, Panhandle Eastern Pipe Line Co., is now located at 4205 Field Building, 135 South LaSalle Street, Chicago. Headquarters formerly were at Kansas City.

Fred A. Compton, Director of Purchases of The Detroit Edison Company, has again been elected to the Directorate of the Detroit Board of Commerce.

Merle Phelps has been named Director of Purchases for the Radiart Corporation, Cleveland, Ohio, succeeding vice-president Fred Thomas, resigned.

Horace LaFortune, Assistant Purchasing Agent, California & Hawaiian Sugar Refining Corporation, Ltd., San Francisco, Calif., was recently elected to the Board of Education, San Leandro, Calif.

Continued on page 290



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in your phone book, classified section, for the name and number of your local Johnson Distributor.

● Expensive delays in securing bearing bronze can, for the most part, be prevented. Simply call in your local Johnson Bronze Distributor. Permit him to show you how you can buy exactly according to your needs from our list of 350 stock sizes. Then let him prove to you the excellent service available from stock. There is a Johnson Distributor as near as your telephone.

When you install Johnson UNIVERSAL Bronze you are assured the utmost in performance and long bearing life. There is no higher quality bearing bronze available.

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EMP PERMANENT MOLD ALUMINUM CASTINGS PROVEN IN EXACTING CONDITIONS OF WAR



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Under severe combat flying conditions where sudden extreme changes in temperatures are experienced, the per-

manent and semi-permanent mold aluminum alloy castings made by the Eastern Metal Products Co. are still giving 100% satisfaction in peacetime usage. These castings include such parts as wing tips, gun mounts, oil pump and air injector housings. Here are some of the reasons why EMP castings give dependable service:

- An engineering department to help solve casting problems. The long experience of skilled technicians is available to customers.



Airplane Wing Tip

- A modern foundry fully equipped with the latest type of casting facilities.

- X-ray, physical, chemical and metallurgical control of all production to produce the kind of cast-

ings specified . . . the kind of castings that are made to close tolerances and require only a minimum of machining.

EMP's reputation for delivering on promised dates and a competitive price are additional points to consider in establishing your source of supply.

Our recent plant expansion permits us to offer this all-inclusive service to a few more customers. We'll be glad to offer engineering suggestions and quotations on your requirements. Send us sample, sketch or blueprint of your product.



INDUSTRIAL DIVISION

EASTERN METAL PRODUCTS Co.

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TUCKAHOE 7, NEW YORK

Continued from page 288

Horace McCraney has been named Assistant Director of Purchases and Fred O. Swanson has been named Purchasing Agent for General Mills, Inc., Minneapolis, Minn., according to announcement by Director of Purchases Chris V. Nelson. Mr. McCraney assumes responsibility for bag operations and will supervise ingredient buying, and Mr. Swanson will handle carton, shell and container purchases. Mr. McCraney succeeds Allan E. Mackay who resigned to take a position with Benjamin C. Betner Company, Philadelphia, Pa., in sales development work.

J. E. Anderson has been appointed General Purchasing Agent, Zenith Radio Corp., Chicago, Ill. Harvey Tullo, formerly vice president in charge of purchasing, resigned to enter the plastics industry.

Claude A. Crusoe, formerly director of Purchases, Fisher Body Division of General Motors, has joined Willys-Overland Motors, Toledo, as manager of the purchasing department and General Purchasing Agent. George Bancroft, who has been manager of purchasing, will continue in an advisory capacity on policies.

Robert O. Kelly has been appointed State Surplus Property Purchasing Agent, Phoenix, Ariz. He recently was released from the U. S. Army with the rank of captain after four years' service, including two years overseas.

Kenneth W. Camplin, Vice President in Charge of Purchases, Loblaw Groceries, Inc., Buffalo, N. Y., has been elected a director of the company.

T. F. Schaffner has been appointed Purchasing Agent for the Stacey-Dresser Engineering Division of Stacey Brothers Gas Construction Co., Cleveland, Ohio, a division of Dresser Industries, Inc.

Fred A. Thomas has been named Purchasing Agent for the Pilot Life Insurance Co., Greensboro, N.C. For the past several years he has been in charge of the company's supply department.

James H. Dray, formerly Purchasing Agent of the Appliance Department, Sylvania Electric Products, Inc., has been made assistant to the general manufacturing manager, and Purchasing Agent of the Fixture Division of that company at Ipswich, Mass.

Maynard E. Robertson has been named Purchasing Agent for the Briggs-Weaver Machinery Co., Dallas, Texas.

C. S. Youngblood, Purchasing Agent, Gulf Oil Corp., Fort Worth, Tex., is the recipient of a thirty-year pin from his company.

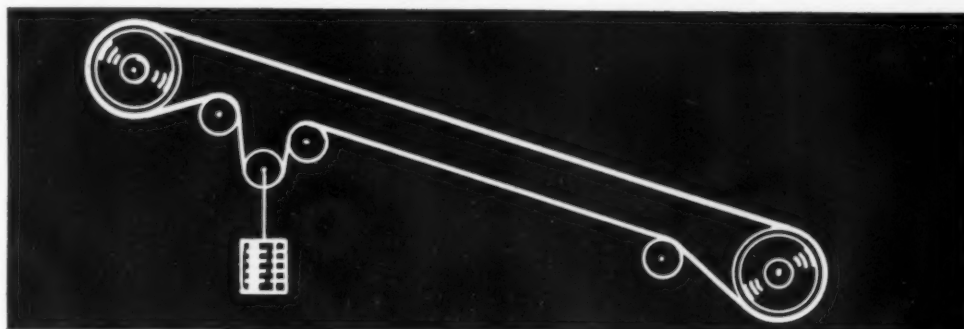
C. N. Swanson has been appointed Director of Purchases for the Continental Supply Company, Dallas, Tex., succeeding R. L. Middleton, resigned.

Continued on page 292

A Clear Picture OF YOUR PLANT

A general view of your plant and its requirements for conveyor belt operation has been acquired by Republic technologists through years of exclusive specialization in the manufacture of industrial rubber products. Republic also, long ago, adopted a system of exclusive sales through industrial distributors. This closely knit, national network of local service organ-

izations provides an on-the-spot source for the additional details that fill in the complete picture of your exact needs. From such full knowledge of particular conditions, Republic Conveyor Belting is designed and built with maximum resistance to the specific factors of service. Ask your nearby Republic Distributor for facts on results of his tailor-made conveyor belt recommendations in your own vicinity.



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*More Threaded Holes
per Tap with*



**HY-PRO
TAPS**

Your cost per tapped hole is much less when HY-PRO Ground Thread Taps are used. When tapping at high speeds these high production taps will usually produce at least **SIX TIMES AS MANY HOLES AS A CUT THREAD TAP!** In addition, they require only about one fifth the sharpening for the same number of holes, and are less easily broken.

PROMPT DELIVERY. Many special as well as standard taps in stock.

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GRIFFIN Molybdenum High Speed Steel Blades of tough, specially Griffin-tempered alloy steel, are a most economical buy, for they will often out-cut ordinary tungsten steel blades eight to ten times. Uniform raker-set teeth that bite. Power machine and hand frame sizes.

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Griffin Tungsten High Speed Steel Blades, for cutting very toughest alloys . . . Griffin Soft Center hand saw blades, flexible as a soft-back, tough as an all-hard . . . Griffin Non-Strip — teeth do not break out when sawing thinnest sheet or tubing — hand frame sizes . . . Write for latest Price List.

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Hack Saw Blades

MADE BY G. W. GRIFFIN CO. FRANKLIN, N. H.
Hack and Coping Saw Blade Specialists Since 1880

Continued from page 290

Sidney Wilson has resumed his post as Purchasing Agent for the Wilson-Dickie-Manufacturing Co., Fort Worth, Tex., following his release from the Armed Services where he spent 25 months in the Army Signal Corps.

A. T. Johnson succeeds E. B. Orchard as Purchasing Agent for the United Gas Corporation, Houston, Tex. Mr. Orchard has been named head of the company's new business department.

James McCool has been named Chief Procurement Officer, United States Reclamation Service, Boise, Idaho.

Harry J. Halliday has been appointed Purchasing Agent for the Jeffrey Manufacturing Co., Columbus, Ohio. He formerly was assistant purchasing agent, and has been with the company 35 years.

C. T. Coleman has been named Purchasing Agent for Knight & Son, Inc., dealers in ferrous and nonferrous scrap, Columbus, Ga. For many years he was purchasing agent for the A. B. & C. Railroad with offices in Atlanta.

E. J. Kodicek succeeds Rudy M. Kodicek, Purchasing Agent, East Chicago, Indiana refinery of Socony-Vacuum Oil Co., the latter having left to assume management of the Industrial Sanitation Co., Chicago, Ill.

John G. Trager has been named Purchasing Agent for the Pacific Coast branch of the National Lead Co., San Francisco, Calif., succeeding John F. Benzing, recently retired. Mr. Trager had been assistant to Mr. Benzing for nine years.

H. M. Zimmerman has been appointed Purchasing Agent for Communications Products Co., Keyport, N. J. He formerly was with Bendix Radio, Red Bank Division.

Barnard H. Havens is now Acting Purchasing Agent for the Chicago Pump Company, Chicago, Illinois.

Joseph A. O'Neill has returned to the Griscom-Russell Co., Massillon, Ohio, as Purchasing Agent, succeeding R. C. Wilson who has been transferred to the engineering department of the company.

W. C. Wiese has been appointed Assistant Purchasing Agent of the St. Louis Southwestern Railway, with headquarters in St. Louis, Mo.

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Hammond Iron Works, Akron, Ohio office: B. W. Rogers, P. O. Box 1030, Akron has been named district representative. B. W. Rogers and J. G. Prentiss will represent the full line of Hammond services.

(Continued on page 294)

General Chemical Fluorine Research Presents...

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PLASTICS



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SOLVENTS



DYE INTERMEDIATES



PETROLEUM

THE CATALYST TO

CHART NEW COURSES FOR AMERICAN INDUSTRY

Boron Fluoride Etherate... valuable catalytic chemical of wide ranging potentialities for American Industry!

This new liquid fluorine compound has a multitude of uses. Technical literature—filling volumes—contains extensive data on the reactions catalyzed by BF_3 as well as by its complexes with other organic molecules. Repeated reference is made to its superiority to other catalysts since reactions are moderated and fewer undesirable by-products result.

Outlined at right are some of the prin-

cipal applications for BF_3 as a catalyst. Perhaps they indicate ways in which you can utilize a chemical of these characteristics in your development or production program.

Boron Fluoride Etherate is commercially available in drums. For full information, contact General Chemical Company, Fluorine Division, 40 Rector Street, New York 6, N. Y. When writing, if you outline your proposed application for this new catalyst, the technical experts of our Fluorine Division can work with you toward an early solution of your problem.

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK 6, N. Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Birmingham (Ala.) • Boston • Bridgeport (Conn.) • Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence (R. I.) • San Francisco • Seattle • St. Louis • Utica (N. Y.) • Wenatchee • Yakima (Wash.)

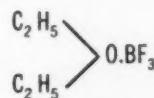
In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited
Montreal • Toronto • Vancouver



Physical Properties

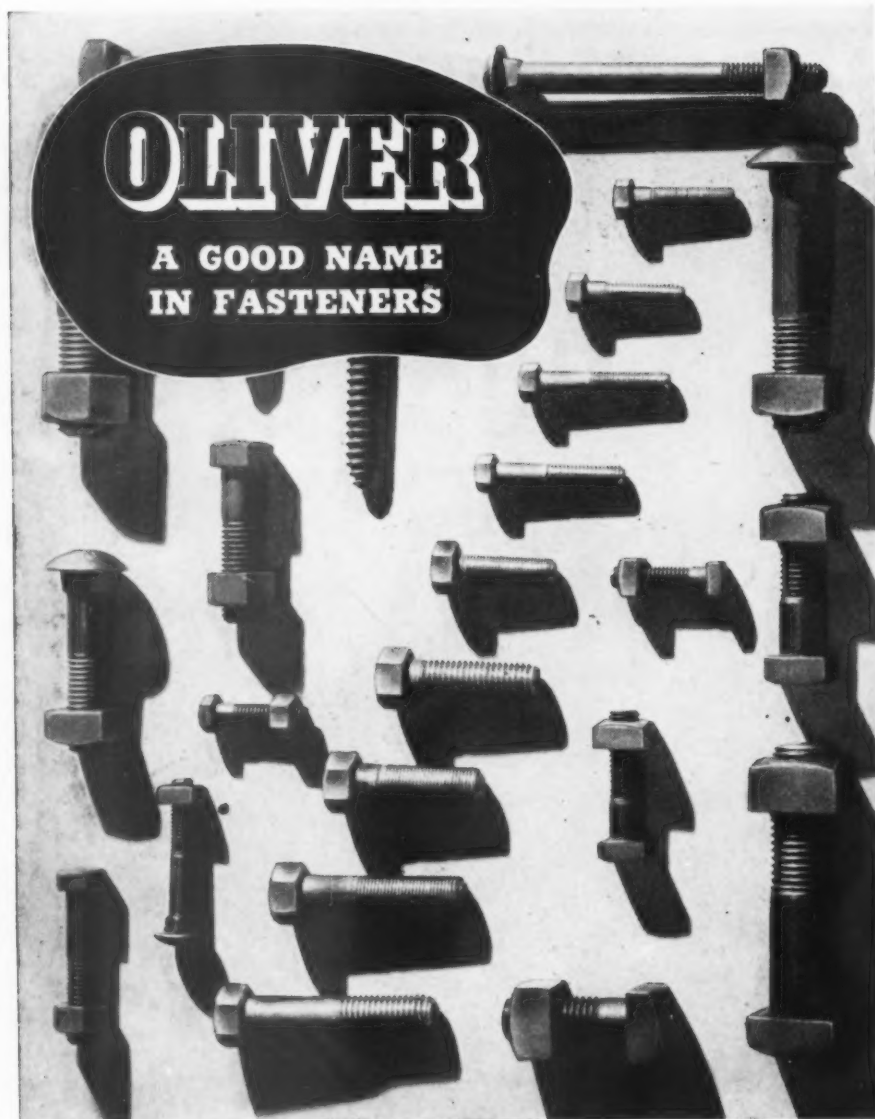
Formula:



| | |
|-----------------|-------------------------------|
| Mol. Wt. | 141.9 |
| Melting Pt. | Less than -60°C |
| Boiling Pt. | 125°C |
| Spec. Gr. | 1.14 at 25°C |
| % BF_3 | 47.8% min. |

Some of the Principal Reactions Catalyzed by BF_3

1. Polymerization of unsaturated compounds such as olefins, diolefins, vinyl ethers, fatty oils, and terpenes. The products may be solid polymers useful as plastics or liquids as in the bodying of drying oils for paints and varnishes.
2. Condensation of aromatic nuclei with olefins and diolefins, paraffins, and olefins, and aromatic nuclei or olefins with acids.
3. As a cyclizing agent for rubber.
4. As an esterification catalyst.
5. As a catalyst in the synthesis of aliphatic acids from alcohols and carbon monoxide.
6. As a promoter and dehydrating agent in the sulfonation and nitration of aromatic compounds.



OLIVER QUALITY FASTENERS

Accurately made • Uniform • Dependable

The complete line of Oliver Industrial Fasteners includes bolts, nuts, rivets, cap screws, lag screws and special fasteners of all commercial sizes. Materials, heat treatments, protective coatings and other specialized features meet your particular needs.

Specify OLIVER Fasteners for highest quality.

OLIVER
IRON AND STEEL
Corporation

SOUTH TENTH AND MURIEL STREETS, PITTSBURGH 3, PA.

(Continued from page 292)

General Electric Co., New York office: Harold L. Aldrich has been made district sales representative for glyptal alkyd resins of the Chemical department.

Carboloy Co., Detroit, Mich. Industrial Supply Corp., 15th and Franklin Streets, Richmond, Virginia, has been appointed an authorized distributor in the central and western portion of Virginia. Frank Hart will be retained as Carbide specialist.

Titan Manufacturing Co., Bellefonte, Pa. J. A. Gulick has been named sales representative for Oklahoma, Arkansas and Northwestern Texas, with offices at 310 Thompson Building, Tulsa, Oklahoma.



J. A. Gulick

R. A. Egelhoff

St. Louis, Mo., office: Roy A. Egelhoff has been made sales representative for Iowa, Kansas, Missouri, Southern Illinois and Southwestern Indiana, with headquarters at 817 Arcade Building. Cleveland, Ohio, district: L. E. Vail has been appointed to a similar position for Northern Ohio, working from 408 Carnegie Hall Building, Cleveland.

Yale & Towne Mfg. Co., Eastern New England district: Lt. Col. Cliff Haddrell, veteran materials handling engineer, has become associated with Lee H. Long, sales representatives on industrial trucks.

E. C. Atkins and Co., New Orleans, La., office: Charles S. Haggerty has retired as manager of this branch. Mr. Haggerty



H. Waddle

C. S. Haggerty

started traveling throughout the district for Atkins when just a young man and upon the establishment of their branch in 1912, became its manager. Howell Waddle, formerly assistant manager, succeeds Mr. Haggerty.

Parker Appliance Co., Cleveland, Ohio. Henry M. Reese, formerly superintendent of the valve and bender division, has been named special field sales application engineer.

(Continued on page 296)

Information

FOR ELECTROPLATERS AND METAL FINISHERS

Udylite has made an intensive study of electroplating and allied arts. The work of its Research and Development Division is a well-organized, full-time operation.

In the last 27 years Udylite engineers and electrochemists have encountered a wide range of problems and uncovered a vast amount of valuable information.

Udylite equipment has been built on this foundation. A few of the available descriptive bulletins are shown here.

If you would like to have any of these bulletins, tell us which ones. If none seems to bear on your individual problem, tell us what it is. Our engineers will have some information that may save you a lot of time and effort.

THE Udylite CORPORATION
 1651 EAST GRAND BOULEVARD
 DETROIT 11, MICHIGAN
 REPRESENTATIVES IN ALL PRINCIPAL CITIES

WHERE PRODUCTION COUNTS

Use *Chicago Rawhide* HAMMERS and MALLETS



C/R hammers have malleable iron heads with replaceable coiled rawhide faces.

When hammers and mallets must take stern punishment in long, hard service... when they must give forceful blows with maximum protection to fine finishes and expensive machined parts... it will pay you to insist on *Chicago Rawhide*. Made from tough, resilient, carefully selected hides, C/R hammers and mallets won't crumble, split, mushroom or erase, and they hold their true striking surfaces. Rawhide protects... Chicago Rawhide protects most.

CHICAGO *Rawhide* MFG.CO.

1203 ELSTON AVENUE • CHICAGO 22, ILLINOIS

(Continued from page 294)

Reliance Electric & Engineering Co., Pittsburgh office: C. V. Gregory has been appointed district manager to succeed Bon J. Ballard, who became assistant to the sales vice president. L. J. Carr, who prior to his service in the U. S. Naval Reserve, was a sales engineer in the Chicago office, has been assigned to the sales staff in Pittsburgh.

Firestone Tire and Rubber Co., Akron, Ohio. William S. Wilson, who was manager of the war products division, has



been named assistant manufacturer's sales manager. Mr. Wilson's entire experience of twenty years with the company has been in the sales department.

Graybar Electric Co., New York, N. Y. Edward R. Yonkers of Omaha has been appointed assistant district manager at Detroit. Day L. Harper, former manager at Duluth has succeeded Mr. Yonkers at Omaha. Paul D. Barber has taken over the duties of manager at Duluth where he succeeds Mr. Harper. W. G. Aasgard has been named Northern District Operating Manager for the company, replacing H. D. Dalquist at Minneapolis. Mr. Dalquist is retiring on a service pension after 35 years with the company.

Sylvania Electric Products, Inc., New York, N. Y. B. K. Wickstrum has been pro-

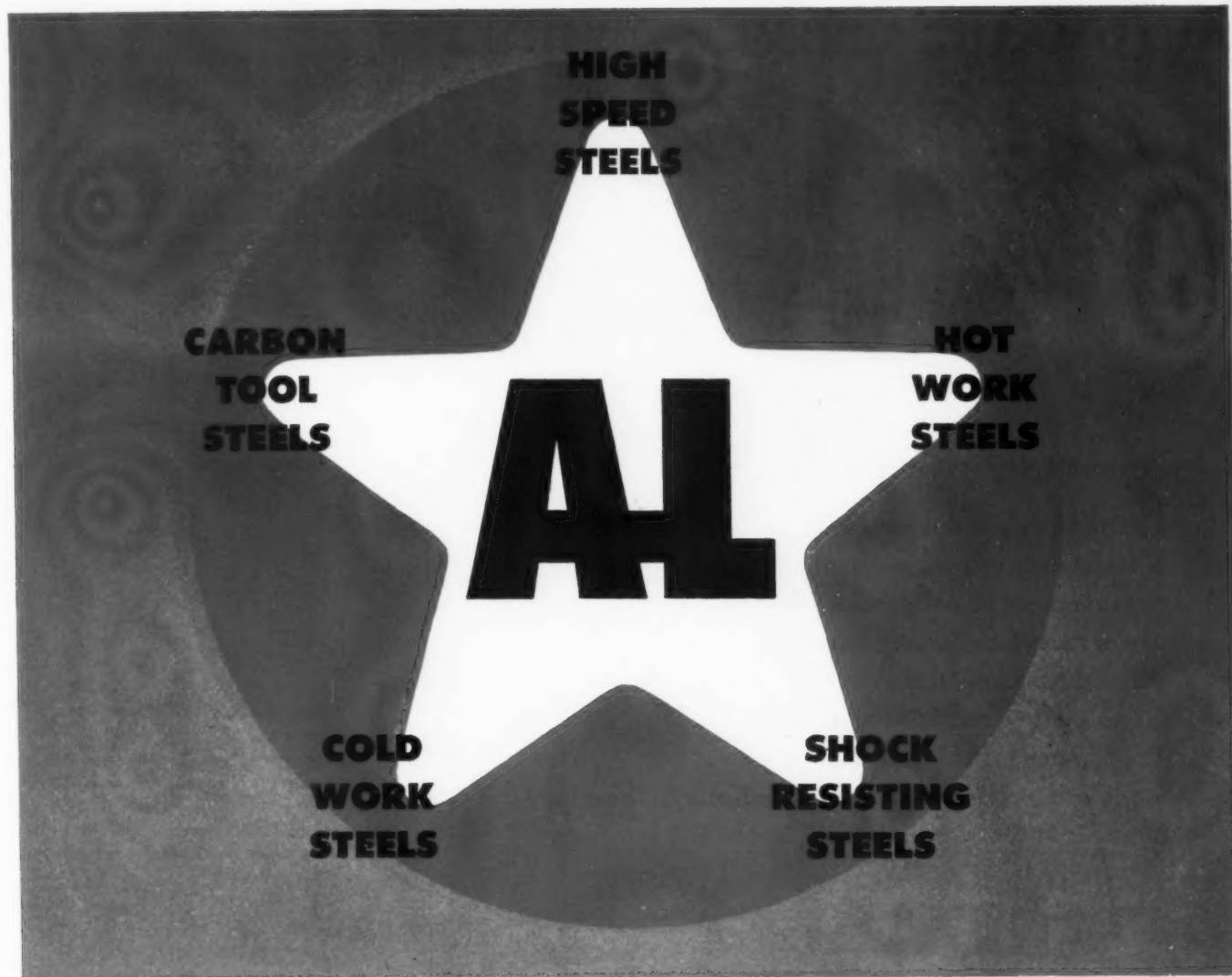


moted to general sales manager of lighting products, with headquarters in New York.

W. S. Rockwell Co., Cleveland district: Don A. Gilbert has been appointed district sales representative for Ohio, with offices at 5005 Euclid Avenue.

International Nickel Co., New York, N. Y. R. M. Wilson has joined the technical service section as a welding engineer.

(Continued on page 298)



THE *Right* TOOL STEEL
FOR YOUR *Individual* REQUIREMENTS

Send for
THIS
BOOKLET



Complete shop data on the properties, uses, forms, sizes and methods of handling every member of the extensive Allegheny Ludlum family of Tool Steels—170 pages, handily pocket-sized and indexed for easy reference. Write for it today—on your company letterhead, please.

ADDRESS DEPT. . . . P-43

NO more using a tool steel that merely comes close to your actual requirements.

Now you can select the steel that fits each of your needs *exactly*—gives you better, faster performance or longer tool life. There's sharp emphasis on cost-reduction today—and in the broadly varied

line of Allegheny Ludlum Tool and Die Steels you'll find a type to fit each one of your machine operations like a hand in a glove—the *right* tool steel that can save money for you. • It doesn't cost a thing to let our Service Engineers check your tooling set-ups with you—why not call us in?

ALLEGHENY LUDLUM

STEEL CORPORATION • General Offices, Pittsburgh 22, Pa.

Specialty Steels - EXCLUSIVELY

AUTOMATIC SCREW MACHINES

Perform Best with

Stuart's

ThredKut ThredKut 99 SPEEDKUT SUPERKool Base

STUART engineers have seen it many times—the almost startling improvement in performance when one of those four Stuart products is substituted for an ordinary "getting-by" oil on a screw machine operation. The reasons for the difference are nothing mysterious. Stuart's ThredKut 99, ThredKut, SuperKool Base Blends and SpeedKut are heavy duty, high anti-weld, high lubricity oils which make improved finish and longer tool life possible—their high quality insures protection for precision machinery. Their use insures optimum production results by increasing the efficiency of automatic precision machines. That is why so many of the largest, oldest, screw machine products plants use Stuart Oils.

Improve the performance of your screw machines with Stuart Oils—start by talking it over with a Stuart sales engineer.

"Cutting Fluids for Better Machining" is a Stuart Oil handbook containing information and data on machining as well as cutting fluids. . . . Available to you upon writing—

D. A. Stuart Oil co.
EST. 1895 LIMITED
2727-31 SOUTH TROY STREET, CHICAGO 23, ILL.



Stuart Oil Engineering Goes With Every Barrel

(Continued from page 296)

Link-Belt Co., Chicago, Ill. M. J. Parykaza has been named district sales engineer in charge of the Moline, Ill. plant at 1608 Fifth Ave., one of three newly opened sales offices. L. R. Clark has been placed in charge of the new office at 730 Temple Bar Building, Main & Court Sts., Cincinnati 2, Ohio. C. C. Wiley has been made district sales engineer in charge of the new office at Birmingham, Alabama, located at 823 Comer Building, 2100 Second Avenue.

H. K. Porter Co., St. Louis office: R. E. Nelson, previously assistant manager of the Porter process division in Pittsburgh, has been named manager of the



newly opened district office in the Paul Brown Building. This will be the twelfth district office handling Porter-Devine-Quimby products.

Hammond Iron Works, Warren, Pa. Midwest Equipment Co., 4120-22 W. Jefferson Avenue, Detroit, Mich., has been named district representative. George Wimmer and R. C. Munn, operators of the company, will represent the full line of Hammond services.

Yale & Towne Mfg. Co., New York office: J. J. Morris, Army Air Force veteran, has rejoined the company as the

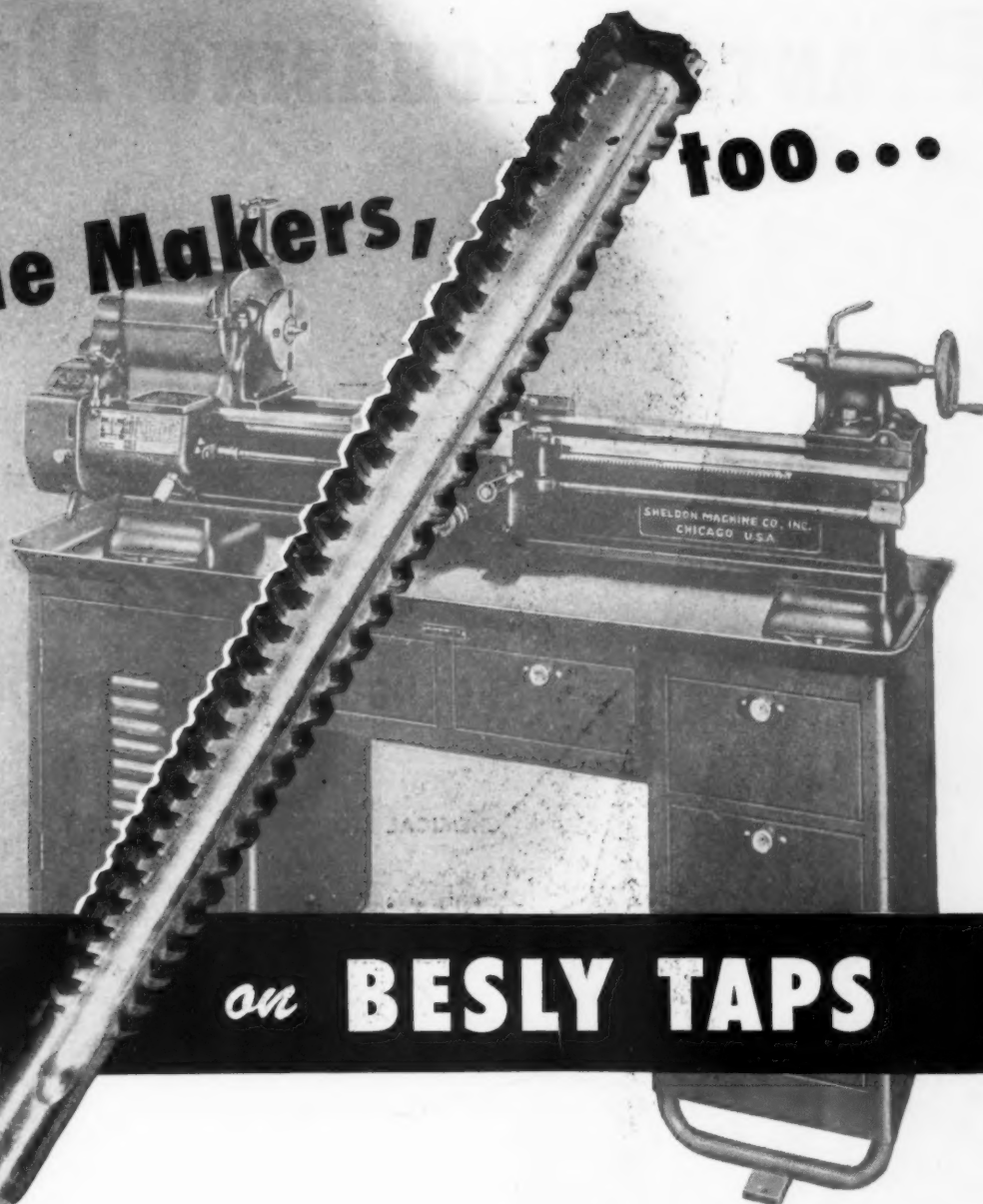


lock and hardware specialties representative of the Stamford division for New York City, Long Island, New Jersey and the western part of Connecticut.

New Departure Division, General Motors Corp., Washington office: Alwin A. Gloetznar has been selected to head up the new Southeastern territory. Mr. Gloetznar has been in charge of the Washington office, and his headquarters for these added functions will continue to be 1154 National Press Building.

(Continued on page 302)

Lathe Makers, too...



Depend on BESLY TAPS



Helpful Facts For Tap Users

Get your copy of this valuable booklet. It contains vital data on taps and tapping procedures. Tables list various classes of fits. Tap drill sizes and tapped hole sizes are shown in detail. Charts, diagrams and other information on tap grinding and sharpening are also included. Write today on your letterhead for your copy—free.

In manufacturing bench and tool room lathes, the Sheldon Machine Co., Chicago, uses Besly Taps to maintain the close tolerances specified in all threading operations. Like other outstanding manufacturers of fine equipment, Sheldon recognizes that precision in a lathe can be no greater than the accuracy of the tools used to build it.

On their record for unfailing performance, Besly Taps have gained nation-wide acceptance for capacity to meet top specifications for clean-cut, low-cost threading. In a stock design or "special" there's a Besly Tap to meet your needs for accuracy, service and economy.

Why not invite the help of Besly engineers in selecting the right tap for the job. **WRITE TODAY!**

BESLY

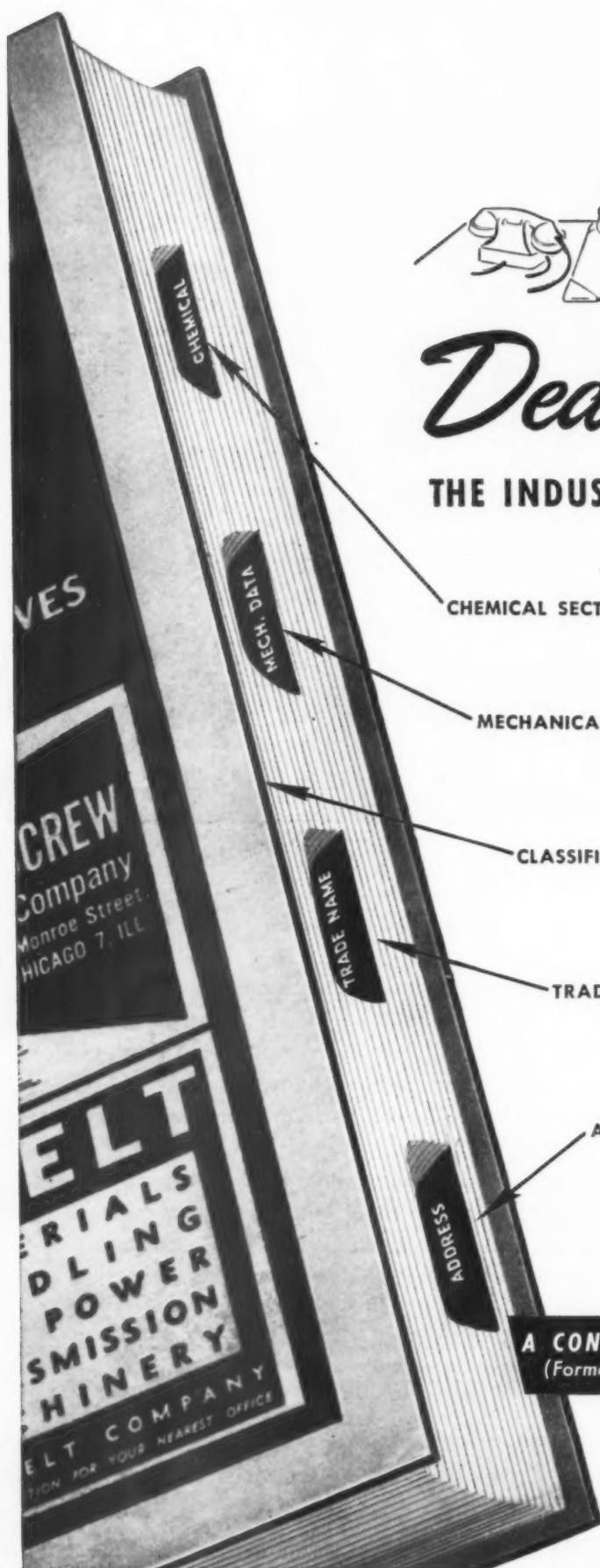
**BESLY TAPS • BESLY TITAN ABRASIVE WHEELS
BESLY GRINDERS AND ACCESSORIES**

CHAS. H. BESLY AND COMPANY, 118-124 N. Clinton St., Chicago 6, Ill. Factory: Beloit, Wis.

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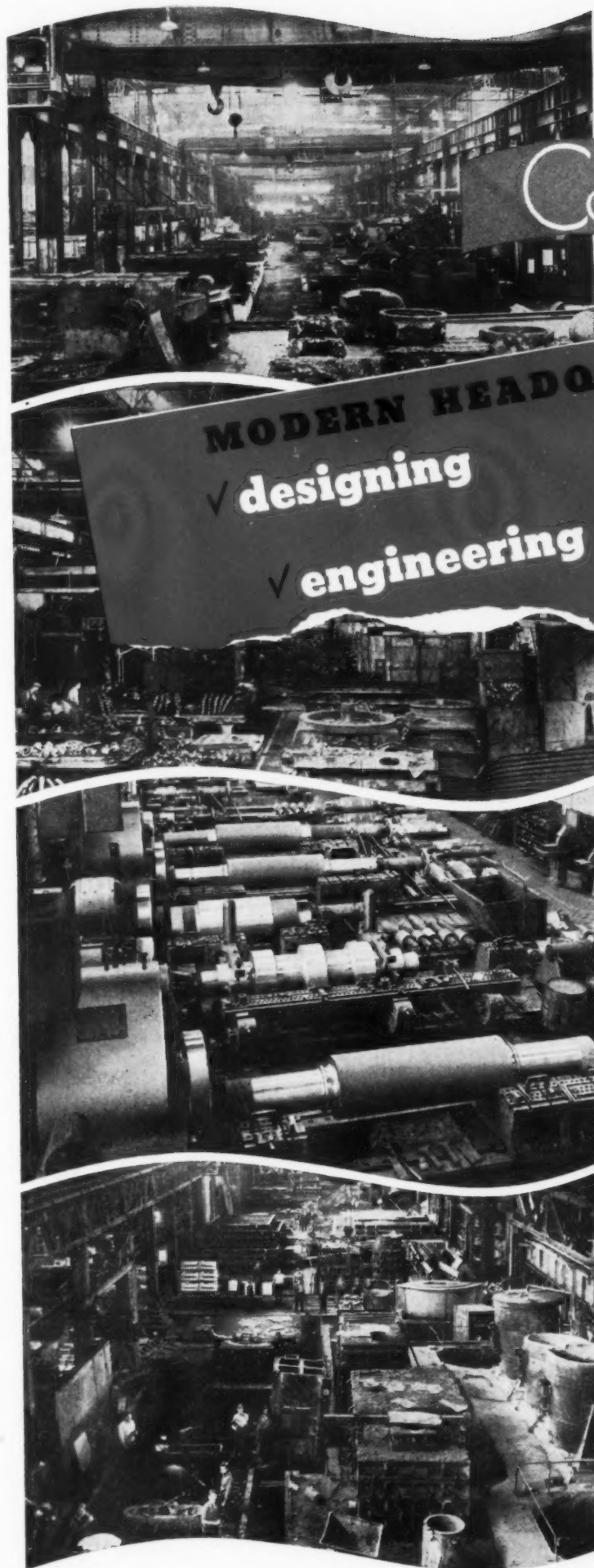
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A CONOVER-MAST PUBLICATION
(Formerly Plant-Production Directory)

PLANT PURCHASING DIRECTORY

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Continental

MODERN HEADQUARTERS FOR

✓ **designing**

✓ **engineering**

✓ **developing**

✓ **fabricating**

Four modern Continental plants, equipped with pattern shops, foundries, roll shops, machine shops, heat treating departments, and latest types of X-ray and metallurgical testing equipment—plus a highly experienced engineering organization, stand ready to build complete plants for the production and handling of ferrous or non-ferrous metals.

Write for Continental's descriptive bulletin showing their vast facilities and diversified products.



Continental

FOUNDRY & MACHINE CO.

PITTSBURGH • CHICAGO

Plants at East Chicago, Ind. • Wheeling, W. Va. • Pittsburgh, Pa.

Life of Rolling Mill Wearing Parts Increased 6 to 8 Fold by Conservation Welding...

Rolling mill coupling boxes, spindles and crabs, whether made of manganese steel or carbon steel, are given added service life, and replacement cost figures for these members are substantially reduced through the application of Amsco Welding Products.

The coupling box shown in Picture A-484, which is cast of austenitic manganese steel, is being built up with Amsco Nickel-Manganese Steel Welding Rod. Obviously, it is quite difficult to grind the surface of the deposited weld metal due to the cramped quarters inside a coupling box. But the fact that manganese steel work hardens and polishes while the coupling box is in service, minimizes the necessity of finishing, grinding or peening. This is especially true if the wabblers of the opposing spindle, crab or roll, as that shown in Picture A-485, are built up or hardfaced with Amsco Economy Hardface.

The ground surface of Amsco Economy Hardface, being slightly harder than work-hardened manganese steel and having a Brinell hardness of between 450 and 550, takes on a high polish, with the result that very little friction is set up between it and the Nickel-Manganese Steel surface,

which work hardens to between 400 and 500 Brinell.

Picture A-486 shows an ordinary carbon steel tight crab that has been built up with Amsco Nickel-Manganese Steel electrodes. At another rolling mill, the superintendent states that it is standard practice to purchase ordinary carbon steel crabs and build them up with Nickel-Manganese Steel after they have become worn, and



that they obtain six to eight times as much service life from wabblers reconditioned with Nickel-Manganese Steel rod as from carbon steel.

Send us your problem for the application of Amsco Welding Products to the reclamation, hard surfacing and repairing of ferrous equipment parts.

(Amsco Welding Products are produced and sold in Canada by Canadian Ramapo Iron Works, Inc., Niagara Falls, Ontario.)

AMSCO

Foundries at

Chicago Heights, Ill.; New Castle, Del.;

Denver, Colo.; Oakland, Calif.;

Los Angeles, Calif.; St. Louis, Mo.

Offices in Principal Cities

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS • ILLINOIS

AMERICAN
Brake Shoe
COMPANY

United States Rubber Co., San Francisco office: Walter C. Burns has been appointed district sales manager of the mechanical goods division. Mr. Burns will have supervision in northern California and most of Nevada, including the cities of San Francisco, Sacramento, Stockton, Fresno and Reno.

Acme Steel Co., Detroit office. John H. Prout, formerly with the Harris-Seybold-Potter Company, has joined the staff at Detroit. He is a specialist in wire stitching.

Chicago Pneumatic Tool Co., New York, N. Y. Robert A. Rakin has been appointed sales manager of the diesel engine division. Mr. Rankin, formerly assistant manager of the engine division, superseded H. W. Buker, who retired after 26 years service with the company.

Globe Steel Tubes Co., Milwaukee, Wis. Gilbert H. Krohn has been appointed manager of sales of the Detroit district sales office. Willard C. Christianson has



G. H. Krohn

C. W. Christianson

has been transferred to the Chicago district sales office as sales agent succeeding Mr. Krohn. F. K. Krell has been named sales service supervisor to succeed Mr. Christianson.

Allegheny Ludlum Steel Corp., Pittsburgh, Pa. W. J. Adamson has been named general manager of sales. J. M. Matthews has been made manager of silicon steel sales. Both men will make their headquarters at Brackenridge. W. H. White has been appointed manager of tool steel sales, Detroit, with offices at Detroit. C. R. Mitchell has been assigned to the Buffalo territory as district manager. C. H. Vaughan has been named district manager of Birmingham district, and C. H. Nesbitt has been made his assistant. W. A. Peterson, Tool Steel Division, has been transferred from Chicago to the Milwaukee district.

Timken Roller Bearing Co., Canton, Ohio. Six naval veterans and a former member of the WPB have recently returned to their pre-war jobs in the industrial division. The veterans and their positions are as follows: R. G. Harmon, field engineering, Chicago; D. G. Gibson, field engineering, Cincinnati; S. T. Salvage, assistant district manager, industrial division, Cleveland; R. L. Williams, field engineer, Cleveland; F. J. Hartshorne,

(Continued on page 304)

Talide

(TUNGSTEN CARBIDE)

Performance!

**TALIDE METAL MEETS
EVERY REQUIREMENT**

"98% More Production per Tool Grind with Talide Tools"

The chief engineer of a prominent manufacturer recently compared performance on different carbide cutting tools on a non-ferrous aircraft part. He reports...

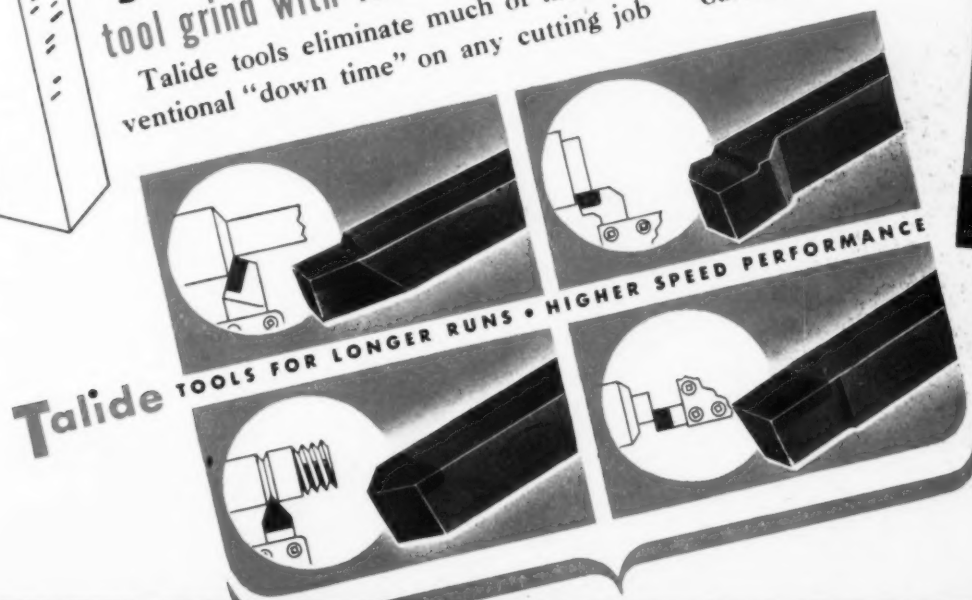
"98% More production per tool grind with TALIDE"

Talide tools eliminate much of the conventional "down time" on any cutting job

—turning, boring, or facing. They keep cutting on and on and on.

Universally used for cutting operations on steel, cast iron and non-ferrous metals and non-metallic materials, Talide Tools are guaranteed to slice production costs.

You can obtain Talide tool tips direct from stock or a Talide sales engineer will call and recommend the proper use and grade of Talide Carbides for you.



Send for Catalog 44-T listing standard Talide Tools and Tips.



THE ENGINEERED CARBIDE FOR ALL APPLICATIONS



METAL CARBIDES CORPORATION

YOUNGSTOWN 5, OHIO *Pioneers in Tungsten Carbide Metallurgy*

SINTERED CARBIDES FOR CUTTING • HOT PRESSED CARBIDES FOR DRAWING AND WEAR RESISTANCE

now available
PRECISION GEAR CAPACITY
 generating • grinding • shaving



The Niagara Falls plant of Bell Aircraft now offers substantial precision gear-manufacturing capacity, including \$200,000 new equipment, to interested manufacturers.

We can handle:

1. Gleason straight bevel gears up to 12" O.D.
2. External spur gears up to 12" O.D.
3. Internal spur gears up to 15" O.D.
4. Spiral bevel gears up to 18" O.D.

(All necessary heat-treatment for gear-cutting available.)

Bell is also equipped to handle electrical cable and wire work assembly, and tube bending assembly up to 2" O.D. We also have Plexiglas forming capacity, and top-grade anodizing and plating capacity. Brown & Sharpe automatic up to 1" O.D. For information write to Dept. 2.



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 YOUR PUMPS**
 you will need many bolts and
 studs involving special ma-
 terial, heat treatment, and threaded
 to close tolerances. You will be writ-
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 bolting that has made Erie known
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(Continued from page 302)

field engineer, Milwaukee; and L. M. Meyer, field engineer, Pittsburgh. L. H. Gegenheimer, the former WPB member, is now district manager of the industrial division in Boston.

Westinghouse Electric Corp., Cincinnati office Norman C. Hurd has been named manager of the Cincinnati Manufacturing and Repair Department.

Insl-x Co., Brooklyn, N. Y. Dan J. Connor Co., Real Estate Trust Bldg., Philadelphia has been appointed to represent the company in Eastern Pennsylvania, Southern New Jersey, Eastern Maryland and Washington, D. C.

Rust-Oleum Corp., Chicago, Ill. E. W. Kush, 769 St. Paul St., Denver, has been named sales agent in the railway supply field for Colorado, and R. B. Parrish, 1201 Fourth Street, Jackson, Mich., has been appointed industrial representative in the Michigan territory.

Signode Steel Strapping Co., Chicago, Ill. Leroy T. McGuire has been appointed sales manager. Lester B. Hamersley has joined the organization in a market research and analysis capacity.

Berger Manufacturing Div., Republic Steel Corp., Canton, Ohio. S. E. Howes has been made assistant manager of sales of the Steel Equipment division.

Taft-Pierce Manufacturing Co., Michigan territory. The Burleigh-Stocker Machinery Co. has been named sales agents with headquarters at 1914 Fisher Building, Detroit.

Wood Shovel & Tool Co., Piqua, Ohio. V. G. Scott, previously production manager, has been appointed manager of sales to succeed N. T. Jacobs, deceased. Mr. Scott joined the Wood organization in January 1942 as assistant manager of sales.

Kaydon Engineering Corp., Muskegon, Mich. F. D. Clark has been made district engineer in Cleveland for the Ohio territory. C. C. Crosier has been assigned to a similar post in Chicago for the Illinois and Wisconsin territory.

Progressive Welder Co., Eastern district. H. B. Axtell has joined V. A. Chern to represent the company in the East. Axtell and Chern have established offices at 15 Gramercy Park S., New York 3.

B. F. Goodrich Co., San Francisco office. R. T. Kain, recently placed on inactive status by the U. S. Navy, has been named district manager of the Industrial Products Sales division.

Pennsylvania Salt Mfg. Co., Special Chemicals Division, Tacoma, Wash. office: Robert R. Pierce has been named sales service representative. Mr. Pierce will handle all products of the Special Chemicals division in the Washington-Oregon-Idaho-Montana area.

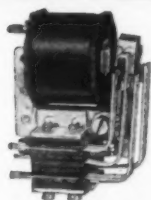
for every control need...

RELAYS *by* GUARDIAN



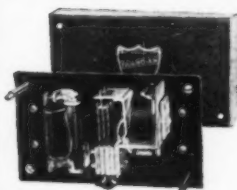
Whether the principle is electronic or magnetic . . . here are some of the latest, greatest basic design Guardian Relays, Solenoids and Stepping Switches we are privileged to present to design engineers.

Each unit offers an unlimited number of variations . . . often making a standard Guardian Relay a "special," effecting big savings in time and money. Highly efficient, compact, low-priced, long life, you can depend on it—they'll increase the dependability and quality of your product.



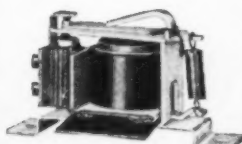
Series 40 A. C. Laminated Relay

This laminated relay is designed to produce maximum output with minimum current input. Typical uses include control of call system bells; auxiliary for automatic radio tuning; remote control of fractional motors; safety devices; instruments; sound movie auxiliaries.



Series T-110 Time Delay Relay

This relay employs a resistance wound bimetal strip to achieve a delayed operation from 10 to 60 seconds. Current flows through the windings generating heat, causing the bimetal strip to bend, closing a contact after the required time delay.



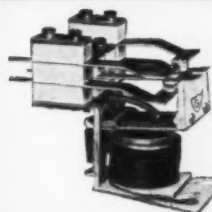
Series 120

The Series 120 is a small, compact relay. It is an economical unit designed for control needs which do not exceed single pole, double throw combination. Economy and simplicity of construction make it possible to offer the Series 120 at a low price compared with its high quality performance.



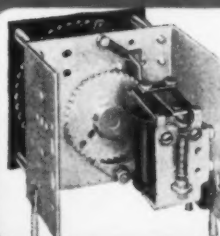
Series 1-A Solenoid

The series 1-A Solenoid by Guardian is one of numerous types for intermittent and continuous duty. Applications include valve control and operation; electrical locking; clutch and brake operation; material ejector; spray gun operation among others.



Series A-100 High Frequency

This A1SiMag insulated relay is compact, convenient, low in cost. In radio applications it is used for antenna change-over, break-in, high voltage keying, grid controlled rectifier keying, remote control of receiver and transmitter, and other high frequency applications.



Series R Stepper

This Relay is built in three basic types for A.C. and D.C. operation: (1) Continuous rotation, (2) Electrical reset, (3) Add and subtract. Its principle application is automatic circuit selection including automatic sequence, automatic wave changing on short wave transmitters, automatic business machines, totalizing units, conveyor control.

GUARDIAN ELECTRIC

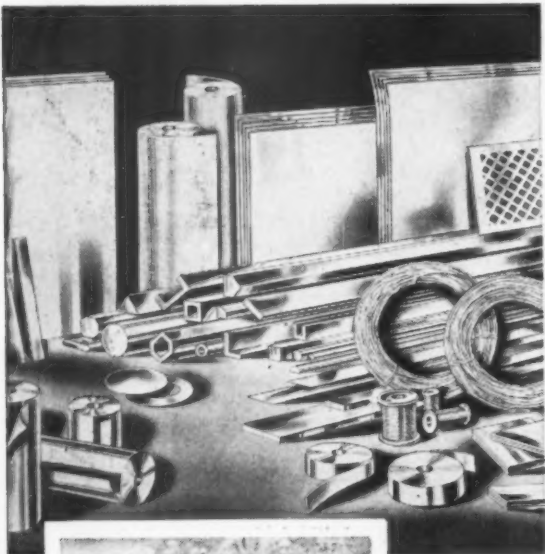
1635-W W. WALNUT STREET

CHICAGO 12, ILLINOIS

A COMPLETE LINE OF RELAYS SERVING AMERICAN INDUSTRY

HUSSEY

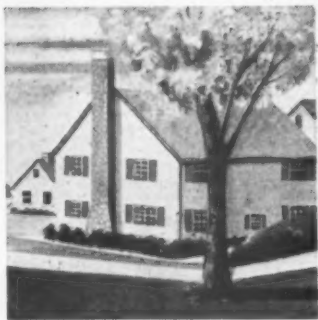
COPPER PRODUCTS



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- COPPER STRIP
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- COPPER PLATE
- COPPER BOILER TUBE FERRULES

For your Copper and Copper Product needs, contact your Hussey warehouse — always ready to serve you — located in every important industrial center.



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Warehouses in Principal Cities

HUSSEY WAREHOUSES CARRY STOCKS OF COPPER AND BRASS PRODUCTS FOR PROMPT SHIPMENT

INDUSTRIAL DEVELOPMENTS

Aluminum Company of America. Thomas D. Jolly, vice president and chief engineer announces plans for construction of \$30,000,000 plant near Davenport, Ia., for the rolling of aluminum sheet and plate. Outstanding feature of the new plant will be high-speed continuous "hot mills" and "cold mills" capable of rolling sheet up to 120 inches in width.

Parkway Foundry & Machine Corporation is name of new company in Brooklyn, N. Y., for the production of non-ferrous castings by the sand, permanent mold and centrifugal methods, announced by Emile



C. Mathis, president of the Matam Corp., Long Island City, N. Y., and Amicus Most, general manager of the old Parkway Foundry Co., New York City. Abroad, Mr. Mathis was known as the "Henry Ford of France" where he manufactured the "Mathis Car," and also the Ford, Lincoln and Mercury cars.

Material Movement Industries is the new name of the Coaltoter Conveyor Co., 310 So. Michigan Ave., Chicago, manufacturers of portable conveyors.

George P. Lehmann has been named to newly created post of assistant manager of the General Electric Plastics Divi-



sions, according to announcement by W. H. Milton, Jr., manager of plastics operations.

St. Clair Electric Products Co., has been organized at Marysville, Mich., for the manufacture of wire bound industrial heater and resistor components. H. W. Tuttle, former president of the H. W. Tuttle & Co., Adrian, Mich., is in charge of sales and engineering.

(Continued on page 308)



The 151 Piece Assortment No. 6151T, above, is typical of the many other balanced sets in the New Britain Line that put the right Tool at hand at the right time.



The complete New Britain Line for Automotive, Aircraft, General Maintenance and Production Needs is sold by leading Jobbers.

In this great Set, powerful, slim-handled Wrenches and rugged, thin-wall Sockets combine to come thru for you in the toughest spots in maintenance service . . . ingenious, special Tools and versatile attachments are right at hand to turn hard jobs easy!

There's ample reason for the wealth of knuckle and job insurance in a Set of New Britain Hand Tools: *Careful Engineering* insures its famous versatility; *Precise Manufacture* guarantees rigid quality control; *Accurate Heat Treating* of the finest selected alloy steels provides extra active strength when and where it's needed.

No doubt about it . . . there's a New Britain Set that just naturally holds the RIGHT Tools for your maintenance and repair jobs. Ask your Mill Supply Jobber to show you one of these money-making Sets—TODAY. The New Britain Machine Co., New Britain, Conn.

New Britain

GREATER STRENGTH • BETTER FIT **HAND TOOLS**



DARNELL CASTERS

! Nearly 4000 TYPES

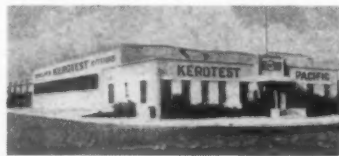


Free MANUAL

DARNELL CORP. LTD.
LONG BEACH 4, CALIFORNIA
60 WALKER ST. NEW YORK 13, N.Y.
36 N CLINTON, CHICAGO 6, ILL.

Container Corporation of America has leased space at Sioux City, Iowa, for plant to produce corrugated shipping containers. The new unit will be part of the Western Container Division which is under the direction of J. V. Spachner, vice president, Chicago.

Security Valve Division of Security Engineering Co., Inc., Whittier, Calif., a member of Dresser Industries, Inc., has been acquired by the Kerotest Manufacturing Co., valve manufacturers, Pitts-



burgh, Pa. New plant has been acquired in Los Angeles. The Kerotest Pacific Co., to be operated as subsidiary of the parent Pittsburgh company, has been organized. The general sales offices will be at 3305 E. Slauson Avenue, Los Angeles.

Witco Chemical Co., Chicago, Ill., has completed important additions to its laboratory facilities, doubling the space and combining laboratory and pilot plant as a short cut to mass production. The improved facilities are described as a means of bridging the difference that exists between "the glass and eye dropper" conditions of a laboratory and the "steel and carload" problems of production. Focal point of interest lies in the pilot plant equipment which produces small drum quantities of material under plant conditions and laboratory supervision, which fills two distinct purposes—the development of methods of manufacture, and the production of modest quantities of material for experimental purposes.

Csst Metals Corporation has been organized at Deshler, Ohio, as a jobbing foundry manufacturing grey iron castings, specializing in squeezer work and cope and drag production castings up to 100 pounds. Doyle M. Carbin is president and general manager.

Triumph Industries, Inc., subsidiary of Noma Electric Corp., have voted to change name to Noma Electric Corporation. Estate Stove Co., K-D Lamp Co., and Central Railway Signal Company are among the subsidiaries of Noma.

Emerson Radio & Phonograph Corp., and General Instrument Corp., New York. Respective boards of directors have taken action recommending merger of latter into former. General Instrument Corp. and its subsidiaries, including the F. W. Sickles Co., will continue to function as a separate division of Emerson.

Belden Brick Co., Canton, Ohio. Announcement is made of the purchase of the Finzer Bros. Clay Co., Sugarcreek, Ohio. Products of the combined companies include face brick, facing tile,

acid proof floor brick and acid proof brick and tile for towers, tanks, and masonry.

Resistors, Inc., is name of new Chicago company organized by Joseph J. Cerny, formerly president and general manager of Lechtrahm, Inc., for the manufacture of rheostats, individual small capacity solder pots, metal resistor cages, R.F. and power line chokes, and custom made heating elements. Address of new company is 2241 Indiana Avenue, Chicago 16.

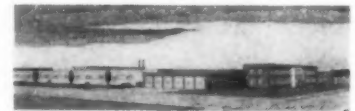
Chester Hoist Co., is new name of Chester Manufacturing Co., Lisbon, Ohio, makers of chain hoists, trolleys and allied products.

Wendt-Sonis Co., Hannibal, Mo., has opened new plant at Hawthorne, Calif., for the manufacture of carbide cutting tools. The plant is under the direction of B. E. Robinett, Western District Manager.

Ohio Equipment Co., Inc., Cleveland, Ohio, materials handling equipment, has opened a branch office in Akron, Ohio, with E. J. Werner, P. O. Box 1207, Akron, as manager. Mr. Werner formerly was connected with the engineering staff of the Firestone Tire & Rubber Company.

Filter Paper Co., makers of tanks, presses, filters, agitators, conveyor and filter media, has moved into new quarters at 2426 So. Michigan Ave., Chicago, Ill.

The Lindsay Corporation, Chicago, is building one-story plant and two-story office on 7½ acre tract in Melrose Park,



Ill. Construction is nearing completion and the company expects to begin production of steel and aluminum units in the new plant by the middle of July.

Blaw-Knox Company, Pittsburgh, Pa., announces that it has acquired the assets and business of Buflovak Northwest Co., Minneapolis, Minn., makers of evaporating and drying equipment. The newly acquired company will be operated as a wholly-owned subsidiary under the name of Buflovak Midwest Company. There will be no change in management or personnel.

Davidson & Serner, process engineers, has been organized with offices at 342 Madison Ave., New York City, and at Commercial Trust Building, Philadelphia, for specialization in the fields of agitation, mixing, distillation, solvent extraction, solvent recovery, furance design, and special heat exchange processes.

Pittsburgh Corning Corporation, Pittsburgh, Pa., announce plans for two plants at Sedalia, Mo., for the production of

(Continued on page 310)

There is far more here than meets the eye



★ In a casual inspection, the many Taylor Forge Nozzles like this seen in big power and process plants simply appear to be sturdy, workmanlike outlets for boilers and pressure vessels.

But there is far more to these nozzles than meets the eye, for into their design goes a fund of technical information that is based on more than forty years of research and experience in dealing with the stresses in vessels and piping under pressure.

IN WeldELLS, too, there is more than meets the eye, for in WeldELLS and our other regular stock welding fittings is reflected this same accumulated "know-how"—this broad experience in designing and manufacturing for full strength.

An excellent example of this is the distribution of extra metal in WeldELLS where stress is greatest. Another, is the tangents which remove the weld from the zone of maximum stress. In fact, you will find evidence of adherence to highest engineering standards and complete mastery of manufacturing methods in all the features listed opposite—features that are combined only in WeldELLS.

Check this list and we believe you will agree that:

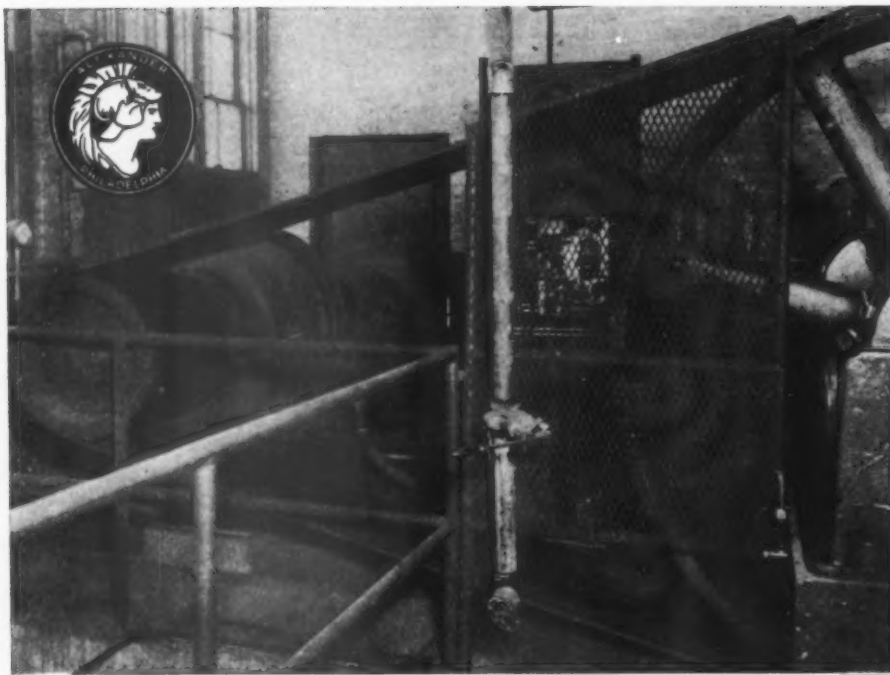
WeldELLS have everything

TAYLOR FORGE & PIPE WORKS, General Offices & Works: Chicago P.O. Box 485
New York Office: 50 Church Street • Philadelphia Office: Broad Street Station Bldg.

WeldELLS alone combine these features:

- **Seamless**—greater strength and uniformity.
- **Tangents**—keep weld away from zone of highest stress—simplify lining up.
- **Precision quarter-marked ends**—simplify layout and help insure accuracy.
- **Selective reinforcement**—provides uniform strength.
- **Permanent and complete identification marking**—saves time and eliminates errors in shop and field.
- **Wall thickness never less than specification minimum**—assures full strength and long life.
- **Machine tool beveled ends**—provides best welding surface and accurate bevel and land.
- **The most complete line of Welding Fittings and Forged Steel Flanges in the World**—insures complete service and undivided responsibility.





Exceptional Performance **CONTINUOUSLY**

MONOBELT

(PATENTED)

From all over the country, in every industry, on long or short drives, comes the same story about MONOBELT. What they call "exceptional performance" is not exceptional with MONOBELT which is engineered to meet unusual power transmission needs. It's just natural for it to have higher horsepower capacity, higher frictional qualities, greater ability to absorb shock loads. We make it that way. Every process from the hide to the finished belt is directly under Alexander control. Try this unusual leather belt at the spot in your plant where MONOBELT can most clearly prove to you those qualities which make users say "exceptional performance."

SEND FOR NEW MONOBELT FOLDER

ALEXANDER BROTHERS

406 N. THIRD STREET

PHILADELPHIA 23, PA.

BRANCH OFFICES: CHICAGO • DALLAS • CHARLOTTE • NEW YORK

Distributors in all Principal Cities

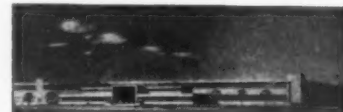
(Continued from page 308)

glass block and Foamglas, a cellular glass insulating material. Estimated cost is \$2,000,000.

Animal Trap Co. of America, Lititz, Pa., has purchased Molded Products Division from the Wm. L. Gilbert Clock Corp., Winsted, Conn., for cellulose plastics products molding.

Standard Register Company, Dayton, Ohio, announces letting of contract for construction of two-story mechanical and engineering building, and remodeling of present plant.

Continental Can Company's Paper Division will begin construction of a new paper container plant in Utica, N. Y.,



shortly, which will be devoted exclusively to the manufacture of sanitary food containers. E. J. Engel, manager of the present Utica plant, will be in charge of the new plant.

Fairbanks, Morse & Co., Chicago. Announcement is made of the appointment of Perry G. Jefferson as traffic manager, replacing Joseph W. Elliott who has retired after 23 years with the company.

Bliss & Laughlin, Inc., Harvey, Ill. Harry M. Clarke has been appointed assistant to the president.

Witco Chemical Company, New York, N. Y., announces consolidation of the Marshall Dill organization, San Francis-

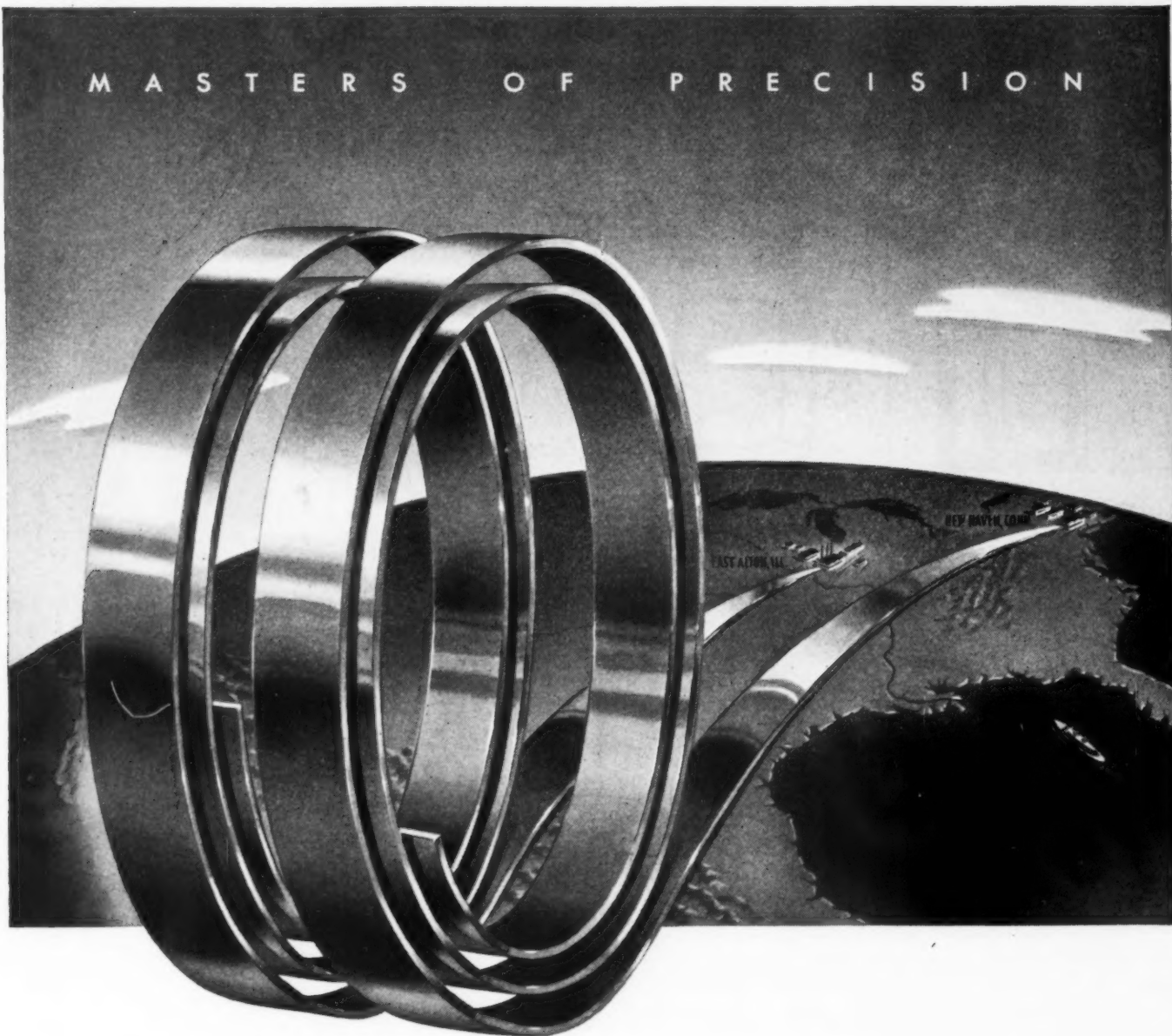


co, Calif., with the Pacific Coast activities of Witco. Marshall Dill has been elected vice president of Witco and will be in charge of the division.

Pennsylvania Salt Co., Philadelphia. Cameron Siddall has been named Acting Manager of Cotton Poisons, Inc., Bryan, Tex., a Pennsalt subsidiary.

American Brake Shoe Co., New York, N. Y. reports a \$12,500,000 improvement and expansion program in addition to the \$3,200,000 expenditures on plant and equipment in 1945. Five new plants are foundries; 2 processing plants, one in U. S. and another in Canada, are planned; a research laboratory is currently under construction. Enlargement of air compressor plant is also reported.

M A S T E R S O F P R E C I S I O N



Two Mills.. Supplying "Tailor-Made" Metals

Western mills at East Alton, Ill., and New Haven, Conn., are strategically situated to supply alloy metals to manufacturers throughout the country.

Both of these mills specialize in supplying metals made to rigid requirements. When close tolerances are a "must" we

meet the specifications. If your needs call for exacting tempers or finishes they are furnished as ordered.

We will welcome your inquiry regarding "tailor-made" metals... in sheet, strip, long coils, fabricated or drawn parts.

WESTERN BRASS MILLS

DIVISION OF OLIN INDUSTRIES, INC.

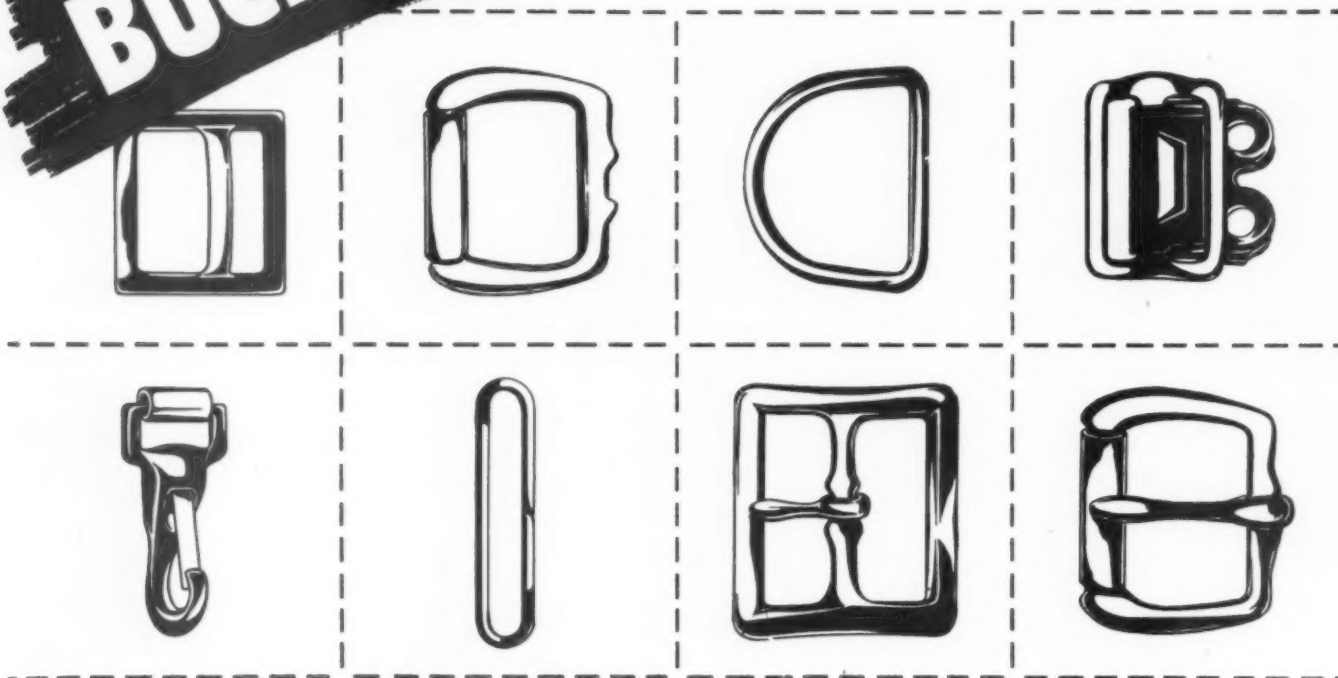
East Alton, Illinois



BRASS • BRONZE • PHOSPHOR BRONZE • NICKEL SILVER • COPPER

BUCKLES

GOVERNMENT-OWNED SURPLUS RINGS, LOOPS, SNAPS, HALTER SQUARES



36 DIFFERENT TYPES AND SIZES

Here is a chance for manufacturers to get back into the production of items that have been curtailed by the unavailability of hardware accessories . . . an opportunity for distributors and retailers to offer customers merchandise that has been unobtainable for years and is still in short supply.

Manufactured when superior metals were available, these durable, well-made World War I buckles and accessories are unused and in good condition . . . are available in sufficient supply to meet volume production and sales requirements . . . are offered at considerably less than standard prices.

BRASS, BRONZE, NICKEL AND STEEL

LOOPS

Slide . . . 2" . . . brass with black nickel finish, bronze finish.

Strap . . . $\frac{3}{8}$ ", 1", 2" . . . brass wire, steel wire . . . enamel finish, bronze finish.

RINGS

$1\frac{1}{8}$ " . . . D steel . . . black finish.

$1\frac{3}{4}$ " . . . bronze.

SNAPS

$\frac{5}{8}$ " . . . steel with brass roller bar in loop.

$\frac{5}{8}$ " . . . iron bronze finish with roller.

$\frac{7}{8}$ " . . . iron bronze finish, brass roller and loop eye.

HALTER SQUARES

$1\frac{1}{4}$ " x $1\frac{3}{8}$ " . . . bronze.

BUCKLES

Center Bar . . .

$\frac{1}{2}$ " to $1\frac{3}{4}$ " sizes . . . bronze, bronze-finished, brass with black nickel finish, brass-plated iron.

Barrel Roller . . .

$\frac{1}{2}$ " to $1\frac{1}{2}$ " sizes . . . bronze, brass with black nickel finish, black japanned, steel japanned.

Tongueless Bar . . .

$\frac{5}{8}$ " to 2" sizes . . . bronze with black nickel finish, brass with black enameled finish.

Loop Buckle . . .

1" . . . black nickel finish, enameled zinc tongueless.

Strap Buckle . . .

1" . . . olive drab steel.

End Buckle . . .

1" . . . bronze-finished brass . . . for web strap.

TO INSPECT this merchandise or to obtain folder giving detailed descriptions and prices contact the regional office of the War Assets Administration that serves the territory in which you are located.

WAR ASSETS ADMINISTRATION

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver
Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville
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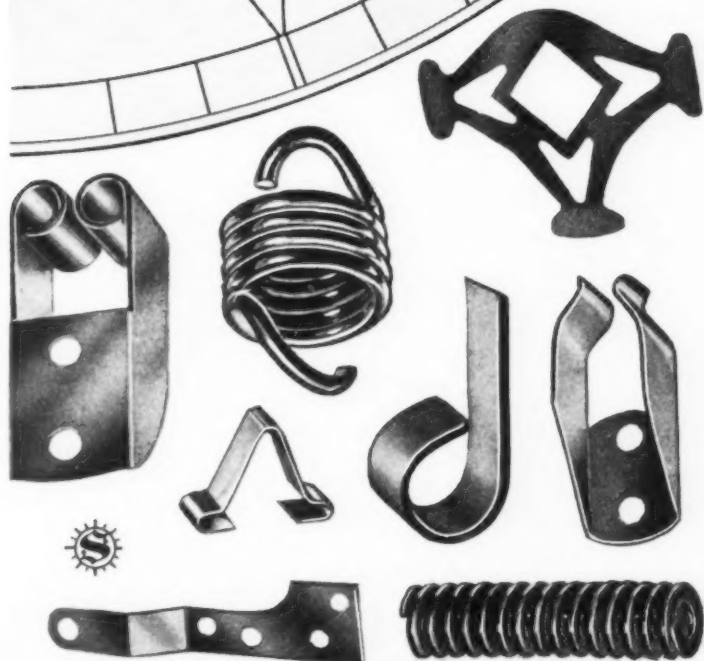


to an
unsuitable
alloy
?

What does it profit if the *design* of a product receives the most skilled engineering and only perfunctory notice is paid the *material* itself? Much unnecessary product failure results from the loose choice of a metal or alloy. And when a product fails in service, hundreds of engineering hours are lost, also incalculable good will.

Choose the alloy to fit the job. In springs particularly, resistance to fatigue, corrosion and abrasion is vitally important to most needs. These are outstanding properties of Seymour Phosphor Bronze. Springs made of this alloy stand hundreds of thousands of flexures without impairment, stubbornly resist corrosion and abrasion, and are practically indifferent to thermal change.

For "service insurance," engineer springs of Seymour Phosphor Bronze, also screw machine products, into all machines, appliances and instruments that must perform indefinitely. Consult your spring maker on this. Also write us for samples for test if interested.



(Samples of Seymour Phosphor Bronze Springs)

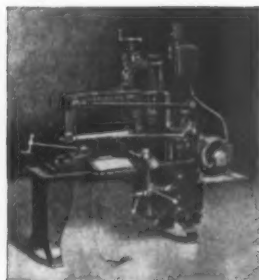
THE SEYMOUR MANUFACTURING COMPANY, SEYMOUR, CONN.

SEYMOUR

PHOSPHOR BRONZE

NONFERROUS ALLOYS SINCE 1878

Also NICKEL SILVER • COPPER, BRASS, BRONZE, ZINC, ANODES • BRIGHT NICKEL • WELDING RODS



Best!
FOR LIGHT DUTY
Speed!

High Speed at Low Cost
No. 4B

For tool room, stock room, or maintenance shop, this 6' x 6' capacity hack saw is superior to anything in its price class. Embodies similar features of MARVEL Heavy Duty production saws. Cuts a 2" standard pipe in 30 seconds—a 5" round piece of machine steel in 8 minutes!

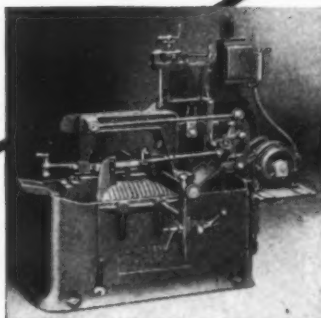
MARVELSAWS

2-Speed and 4-Speed
For applications where materials of different hardnesses are cut, MARVEL 4B is available in 2-Speed and 4-Speed models. Built-in work tracks for holding outer end of bars are also available for all models.

Complete Range of Metal Sawing Machines

Being the largest exclusive manufacturer of metal sawing machines and blades, both hack saw and band saw type, we have the correct answer to your cut-off problems. Each MARVEL model has a distinct application, so write us and we will send our catalog, price, and recommendation for the saw to fill your requirements most efficiently. MARVEL sawing engineers are also available to discuss and analyze your cut-off work. (Without obligation of course.)

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AUTOMOTIVE

AVIATION

BUILDINGS

BUS & TRUCK FLEETS

METAL PRODUCTS

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PAPER MILLS

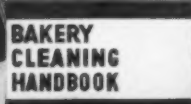
PETROLEUM

POWER PLANTS

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WIRE MILLS

Cover the RIGHT
Cleaners and Methods
for YOUR Operations



Food Products, for Instance

There are only a few RIGHT cleaning materials and methods for every industrial cleaning job . . . but there are a great many wrong ones which lead to wasted labor, excessive costs and untold damage to the surfaces or equipment cleaned. That's why it will pay you to study the Magnus Handbook or Handbooks covering your cleaning operations.

We'll gladly send as many copies of each as you may need for responsible officials in your plant.

1921-1946

TWENTY-FIVE YEARS OF SERVICE TO INDUSTRY

MAGNUS



MAGNUS CHEMICAL CO. 93 SOUTH AVE., GARWOOD, N. J.

Cleaners • Methods • Machines

Lubricating Oils — OPA *T-4598 — All sellers of lubricating oils and allied products may now apply for higher ceiling prices when they are frozen at prices below state fair trade act levels. Amend. 4 to MPR 510.

Mahogany Lumber — OPA *T-4593 — Establishment of dollar and cent mill ceilings on mahogany lumber produced from logs grown in South and Central America and Africa and of special pricing provisions for lumber of West Indian mahogany, announced. MPR 611.

Industrial Storage Batteries — OPA *T-4602 — Manufacturers' maximum prices for industrial electric storage batteries have been increased 10 percent over base price levels. Order 641, Revised MPR 136.

Soil Pipe and Fittings — OPA *T-4552 — An increase of 4½ percent over existing manufacturers' maximum prices for cast iron soil pipe and fittings is announced. Amend. 6 to Revised Price Schedule 100.

Veneers — OPA *T-4557 — Separate pricing provisions for manufacturers of commercial veneer and of box grade veneer and increased producers' ceilings on box grade veneer. Amendment 3 to MPR 538, and Amend. 1 to Revised MPR 176.

Electrical Machinery and Equipment — OPA *T-4555 — Suspension of price control on additional electrical machinery and equipment items, which were not included in machinery and equipment de-control action on April 8. Items include coils, distribution cutouts, insulators, pole line hardware, repair and replacement parts, etc. Amend. 24 to Sup. Order 129.

Metal Culverts — OPA *T-4556 — Manufacturers' ceiling prices for corrugated metal culverts have been increased seven per cent over maximum prices frozen at March 1942 levels. Amend. 8 to Sup. Reg. 14G.

Tools, Dies, Jigs, Molds — OPA *T-4553 — The pricing system provided for specified sales by manufacturers of tools, dies, jigs, fixtures, molds and patterns on April 26 1946, has been extended for use by them when these industrial equipment items are made and used specifically with any product and sold to the buyer of that product. Amend. 40 to Rev. MPR 136.

Switch Ties — OPA *T-4590 — Discretionary ceiling price increases ranging from \$1. to \$7. per thousand board feet on approximately 97 per cent of all railroad switch ties produced in the eastern United States announced. Amend. 5 to 3rd Rev. MPR 216.

Pumps — OPA *T-4600 — Manufacturers of power-operated pumps and equipment have been given an interim increase of 15 percent over base date ceiling prices when sold with the power
(Continued on page 316)



"WINNERS"
are notably endowed with

SPEED

PRECISION, AND

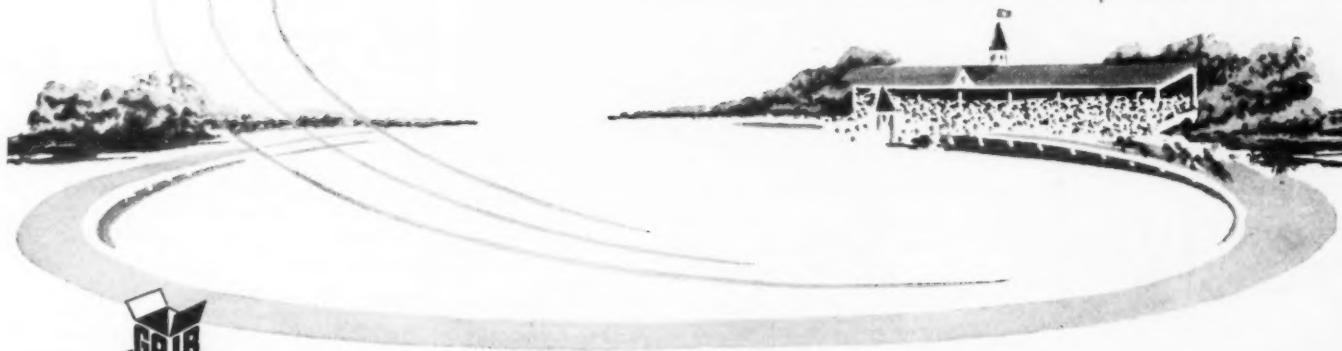
PERSONALITY"

says ROBERT GAIR

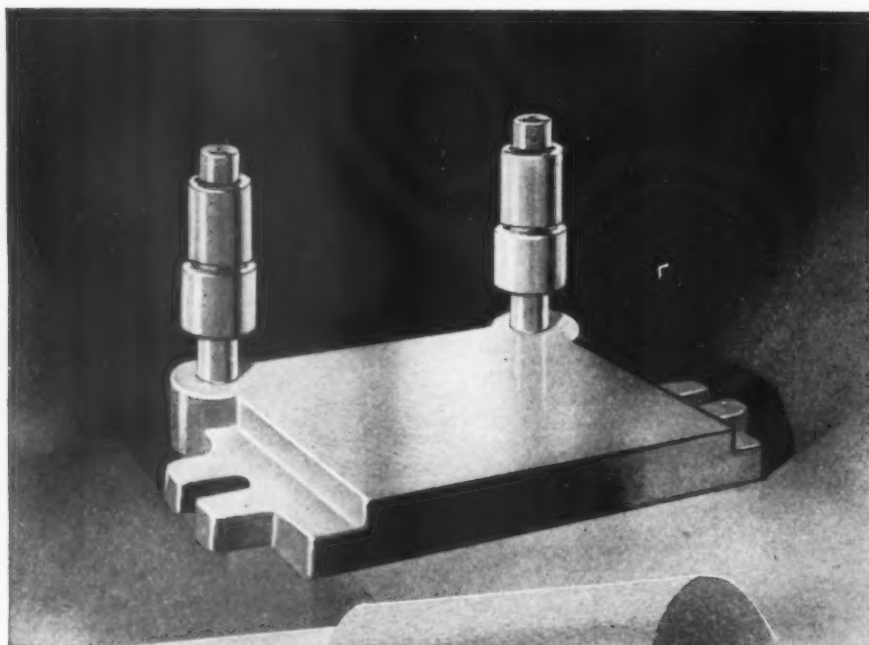
Modern types of packaging machinery are endowed with speed, and personality too . . . and each machine demands a "uniform precision" carton . . . just the kind of distinctive "tailor made" cartons that Robert Gair has been creating and producing consistently for over eighty years . . . cartons that are ***GAIRanteed***.

From a "selling impulse" viewpoint many of our cartons have joined the parade of constant WINNERS.

Write for informative brochure on Precision Packaging



ROBERT GAIR COMPANY, INC., NEW YORK—TORONTO • PAPERBOARD—FOLDING CARTONS—SHIPPING CONTAINERS



Guide-Post Bushings of Ampco Metal

**give you all the unique advantages
found only in aluminum bronze:**

GUIDE-POST Bushings of Ampco Metal keep blanking, forming, and other die sets in alignment, regardless of abuse and hard usage.

Made centrifugally of Grade 18 Ampco Metal and machined to close tolerances, these bushings can be fitted closely . . . do not seize or gall . . . do not "squash out" . . . do not rust . . . outlast steel or ordinary bronze bushings.

Ampco guide-post bushings assure accuracy over long periods, without the necessity of frequent reconditioning or replacement of pins and bushings.

Mail coupon for full details.

- ✓ outlast steel guide-post bushings
- ✓ require no heat treatment
- ✓ have higher compressive strength than other bronzes
- ✓ have higher fatigue and impact values
- ✓ contain only native metals: copper, aluminum, and iron
- ✓ have excellent bearing characteristics
- ✓ are corrosion-resistant

Specify in new die sets

Specify for replacement

Reg. U. S.
Pat. Off.



Specialists in engineering—
production — finishing of
copper-base alloy parts.

A-26

AMPCO METAL, INC., Dept. P-7, Milwaukee 4, Wis.

*Please send me Bulletin 80 on Guide-
Post Bushings of Ampco Metal.*

Name.....
Position.....
Company.....
Address.....
City..... (.....) State.....

☐ Home
☐ Office

(Continued from page 314)

unit and an increase of eight per cent when sold without power unit. Order 640 to Rev. MPR 136.

Tin Cans — OPA *T-4591 — Manufacturers of packers' tin cans, condensed milk cans and general line cans have been given a nine per cent increase in current maximum prices. Amend. 5 to MPR 350 — Amend. 9 to Sup. Reg. 14G.

Temperature Controls — OPA *T-4554 — Manufacturers and resellers of automatic electric temperature controls for heating, air conditioning and refrigeration have been authorized to raise their prices 20.8 per cent over October 1, 1941 prices. Amend. 14 to Order 1, Sec 22 of MPR 591.

Coated Fabrics — OPA *T-4558 — Manufacturers' ceilings for fabrics coated with rubber, pyroxylin or oil, except coated window shade cloth, have been increased approximately 13½ percent. Amend. 14 to MPR 478.

Gears, Pinions, Sprockets and Speed Reducers — OPA *T-4563 — Manufacturers have been granted an increase of 13 percent in their maximum prices. Order 637 Rev. MPR 136.

Portable Pneumatic Power Driven Tools — OPA *T-4562 — Manufacturers have been given an interim increase of 12 percent. Order 635 Rev. MPR 136.

Woodworking Machinery — OPA, *T-4561 — Manufacturers of woodworking and timber working machinery will be given an interim price increase of 10 percent over base date maximum prices. Order 636 Rev MPR 136.

Printing Trades Machine and Equipment — OPA #6545 — The 12 percent increase in ceiling prices granted on January 9, 1946 has been replaced by a 20 percent interim increases. Amend. 1 to Order 568 under Rev. MPR 136.

Copper and Copper Base Alloy Scrap — WAA #255 — In further move to effect equal distribution of surplus copper and copper base alloy scrap at mill level, WAA revoked Order No. 3 to SPA Reg. 17 which permitted owning agencies to make direct sales of the metal. Disposition of all copper and copper base alloy scrap will be handled by WAA to meet industrial production needs as directed by CPA.

Copper, Lead, Antimonial Lead — OPA #6534 — Increases in maximum base prices for copper, lead, secondary lead, lead scrap materials and primary and secondary antimonial lead, effective June 3, announced by OPA.


Brass, Bronze, Copper — OPA #6534 — Simultaneously, similar price increases for brass and bronze alloy ingots (OPA 6533) and for copper scrap, copper alloy scrap and brass mill scrap (OPA 6532.)

(Continued on page 318)



many a tough
spring engineering problem
has been solved
by Accurate engineers...

what's yours?




Manufacturers of hundreds of different things have brought their spring design problems to Accurate engineers. And, Accurate engineers have been able to design springs that were exactly right for the jobs. Often, their suggestions have improved product performance, reduced spring costs and even speeded up assembly time.

Could you use practical help on your spring engineering problems? Would you benefit by the services of a specialized engineering department... one with millions of springs of experience? Ask an Accurate representative to call.

ACCURATE SPRING MFG. CO.
3825 W. Lake Street
Chicago 24, Illinois

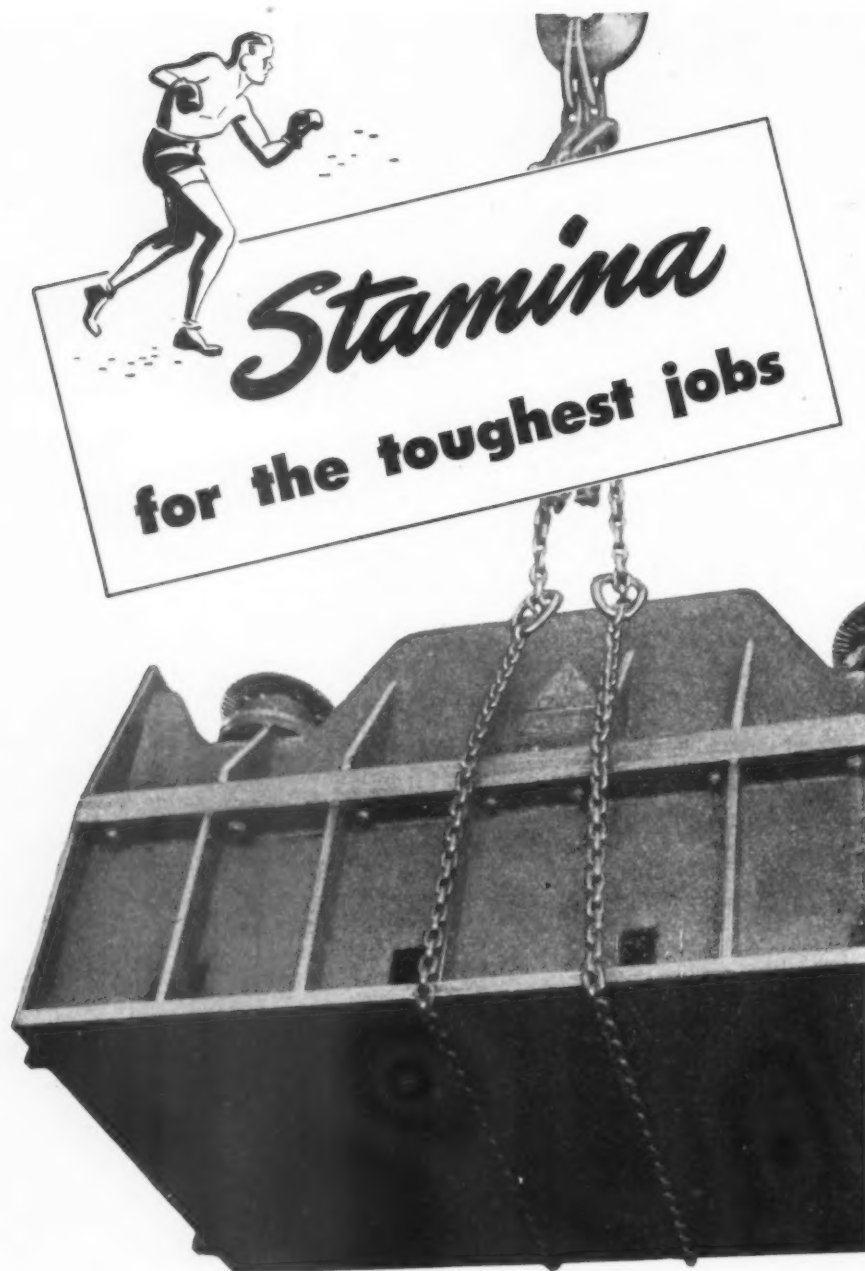
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Accurate
Handbook
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Springs

Springs

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Wire Forms • Stampings



GREAT athletes, like great chains, require tremendous stamina. Many TAYLOR MADE Alloy chains—put into service before the war—are still in use. Here are the reasons why. Alloy steel with twice the tensile strength of wrought iron, stress-free links made from two U-shaped half links and trained experi-

enced craftsmen are united to give you chain that has great resistance to shock... grain growth and work hardness. When you buy chain, buy TAYLOR MADE chain. See your mill supply distributor or write the factory direct.

S. G. TAYLOR CHAIN COMPANY,
Dept. P 7, Box 509, Hammond, Indiana

TAYLOR MADE
Chain "THE BEST BY TEST SINCE 1873."

(Continued from page 316)

Another group of price actions provides compensating price increases for brass mill products, copper wire and cable, non-ferrous castings, metallic lead products made from lead or lead alloys and copper hardeners and deoxidizers.

Tanned Leathers — OPA *6553 — An increase of six per cent in producers' ceiling prices of tanned leathers has been authorized. Order 14 to MPR 61. The action permits tanners to increase their prices on all types of tanned leather by adding the authorized increase factor.

Cutting Tools, Repair Services — OPA *T-4612 — Price increase factor of 17.3 percent granted April 24, 1946, to manufacturers and resellers of cutting tools has been extended to apply also to repair services on the tools affected Amend. 5 to MPR 581.

Power Switchboard Equipment — OPA *T-4623 — Increases averaging 13 percent over 1941 prices were granted to manufacturers and distributors of power switchboard equipment, such as knife and enclosed switches and circuit breakers. Order 643 Under Rev. MPR 136.

Metal Lath and Accessories — OPA *T-4624 — Increases averaging 11.4 per cent over October 1941 prices for certain metal plaster bases and metal plastering accessories, announced. Amend. 44 to Order 1, Sec. 25 of MPR 592.

Pigments and pastes — OPA *T-4637 — Because of increases in the price of primary lead, price advances for pigments and pastes with high lead content, representing an average increase over previous maximum prices of 20 per cent or about 1¼¢ per lb. authorized.

Oil Field Equipment — OPA *T-4576 — Manufacturers of oil field equipment have been authorized to raise maximum prices that have been fixed at October 1, 1941, or March 31, 1942, "freeze" date price levels 10 percent. The 10 percent interim increase applies to drilling and producing machinery, equipment and parts. Drill pipe, casings, engines and tanks are not covered. The increase also applies to water drilling machines and equipment. Order No. 863, Revised MPR 136.

Reclaimed Rubber — OPA *T-4568 — Manufacturers' ceiling prices for reclaimed rubber have been increased by one half cent a pound. Amend. 7 to Revised PS 56, and Amend. 7 to Sup. Service Reg. 35 to Revised MPR 165.

Molasses — OPA *T-4571 — Importers' and wholesale distributors' ceiling prices for Hawaiian molasses have been increased \$3. a ton. Amend. 17 to Sup. Reg. 14F; and Amend. 13 to MPR 295.

Brass and Bronze Alloy Ingots — OPA *6533 — Producers have been granted an increase averaging 15.52 per cent over

(Continued on page 322)

He had the answer...

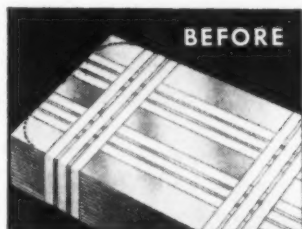


AND CUT COSTS WITH BAUER & BLACK INDUSTRIAL TAPE

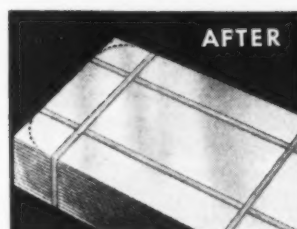


A manufacturer of plastic panels called in a
Bauer & Black Technical Consultant for help...

PROBLEM: To bind together sheets of plastic during shaping operations. A paper masking tape, with relatively little tensile strength, had been employed. Its weakness necessitated wrapping it around the sheets several times, to achieve enough strength to resist the strain of pressure in shaping.



SOLUTION: The Consultant advised Bauer & Black Industrial Tape No. 120. This 80/80-mesh cloth tape, with firm adhesion and great tensile strength,



held panels securely throughout shaping. Savings were considerable, for No. 120 actually cost less than paper tape, and less of it was required for the job!

YOU CAN PROFIT, TOO

The experience of Bauer & Black Technical Consultants with timesaving, cost-reducing methods of using tape in industry is at your disposal. A Consultant will be glad to look over *your* operations to speed production, improve your product or cut costs, **WITHOUT OBLIGATION TO YOU**. Write Dept. 27 today to have him call. Ask also for our stimulating monthly *Automotive News Letter*. It's free, and you'll enjoy it.

WE HAVE A FULL LINE OF TAPES SUITED FOR THESE USES:

General Shop Use: tying, bundling, repair. **Protection:** of tools, finished surfaces, hands. **Use as a Tool:** riveting tape, masking. **Incorporation in Product:** electrical tapes, identification markers, miscellaneous applications. **Packaging:** export shipping, store dispensers, moisture barriers, deep-freeze use, etc.

Products of

BAUER & BLACK

Division of The Kendall Company • 2500 S. Dearborn St. • Chicago 16

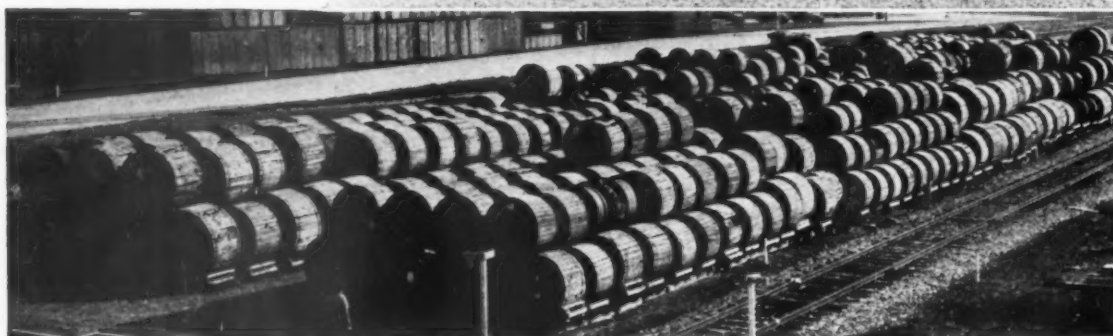
Industrial Tape

PRESSURE SENSITIVE ADHESIVE

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods



For Quick Sale . . . ELECTRIC WIRE AND CABLE



The War Assets Administration has a large inventory of government surplus Wire and Cable. It was made by leading manufacturers for war purposes under close supervision to exact technical specifications.

Some of the types and sizes are standard and conform to underwriters' code. Others, while non-standard, are adaptable to a wide variety of uses.

Some suitable applications are circuits for:

**power and light, radio, telephone and signalling,
ignition and control, plus battery charging,
instrument and switchboard wiring, welding, etc.**

Priced far below its acquisition cost, it will appeal to construction contractors, oil well and mine operators, and ship builders. Ingenious engineers will find many ways to use this material to their advantage.

Get in touch with your nearest Regional Office of the War Assets Administration. Special technical personnel will be happy to give you data on specific types and sizes or arrange for your inspection of the material.

WAR ASSETS ADMINISTRATION

**OFFICES LISTED BELOW ARE TEMPORARILY IN
RECONSTRUCTION FINANCE CORPORATION AGENCIES**

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver
Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville
Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia
Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane
Cincinnati • Fort Worth (Telephone 3-5381)

319-2

VETERANS OF WORLD WAR II: To help you purchase surplus property, a veterans' unit has been established in each WAA office

WHIRLWINDS* Save You Money!



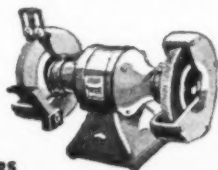
Longer Life—
Better Brushing Surface
Provide High-Speed
**BRUSHING, CLEANING,
BUFFING, FINISHING**
and **BURNISHING**
at Lower Costs!

USE WHIRLWINDS FOR:



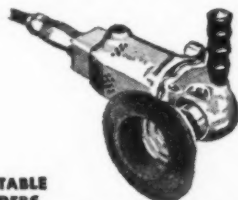
PORTABLE GRINDERS

Whirlwind Brushes come in 4" to 8" wheel sizes; made of .014" wire for rough cleaning, .0118" wire for high-speed buffing, .005" wire for fine finishing and burnishing.



BENCH GRINDERS

Whirlwind Brushes come in six wheel sizes from 4" to 12", in three thicknesses, and in .014", .0118" and .005" wire. Adaptors fit them to almost any arbor or spindle.



PORTABLE SANDERS

Whirlwind Wire Cup Brushes come in 4", 5" and 6" sizes, made of .020" and .022" wire for tough cleaning jobs. Brush has 5/8", 11-thread bushing; threads on sander spindle.

BEFORE you buy another wire wheel brush, here are two things you ought to know about Van Dorn Whirlwind Wire Brushes. (1) An exclusive, patented lock *anchors* each tuft in place . . . separately . . . securely . . . to stay. (2) Their *crimped* wire gives extra life and spring . . . maintains an even, compact brushing surface. **RESULT:** Whirlwinds last longer . . . save time and labor on daily production and maintenance jobs . . . give you a whale of a lot more brush for your money!

Whirlwinds quickly remove rust, scale, old paint, light weld spatter, oxidation, grease or tar . . . clean castings, tanks, structural metal . . . produce a fresh surface that holds

paint when repainting is needed . . . do high-speed buffing and fine burnishing or finishing. You can use Whirlwind Brushes on practically any grinding spindle . . . and particularly on Van Dorn Bench Grinders, Portable Grinders and Sanders.

If you're trying to cut costs . . . here's a good place to start. Put Whirlwind Brushes to work on your toughest brushing, cleaning, buffing and burnishing jobs. Order them today from your nearby Van Dorn Distributor, in wheel or cup types. For your free copy of our complete catalog of over 100 Portable Electric Tools and over 1,000 accessories, write to: Van Dorn Electric Tool Co., 764 Joppa Road, Towson 4, Md.

*Trade-Mark Reg. U. S. Pat. Off.

FOR POWER SPECIFY

"Van Dorn"

(DIV. OF BLACK & DECKER MFG. CO.)

PORTABLE ELECTRIC TOOLS

**"Good Man" murmured the Boss
... as he listened**



"... we suggest using the U.S.E. 'Spot-O-Gum Postage Saver Envelope' printed with a Third Class Indicia. We'll save enough in postage and handling to buy an extra run ... and it shouldn't hurt your returns ..."

"... this official 'Instructions to Postmaster' paragraph, printed on the envelope, will help you keep your mailing list up to date!"

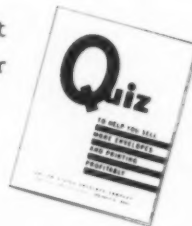
A good man knows how to get and use vital information. When he plans a Mailing, or a Package, or a Business System, he takes advantage of every money-saving, labor-saving short cut ... in Postal Laws and Regulations, in paper stocks, in U.S.E. standardized envelope forms ...

How does he get this information? That's easy! He opens his U.S.E. Envelope Analyzer Kit and there it is, in convenient work-sheet form. With the Analyzer Kit and its three work sheets at your elbow you can check every important detail needed to insure the success of your Mailing, your Package, or your Business System.

And it's free! Ask your printer or paper merchant for a copy of the U.S.E. Envelope Analyzer Kit — or write us on your letterhead, please.

Want to have fun? You can really stump the experts with the U.S.E. QUIZ SHEET. We'll send you copies, free — with an Answer Folder.

E7C



UNITED STATES ENVELOPE COMPANY

14 Divisions from Coast to Coast SPRINGFIELD 2, MASSACHUSETTS

U.S.E. ENVELOPES

Your 3-Fold Business Partner



MAILINGS



PACKAGING



SYSTEMS

(Continued from page 318)

current ceilings on ingots, effective June 3. Amend. 5 to MPR 202.

West Coast Lumber — OPA *6536 — Mill ceiling price increases averaging approximately \$3.50 per thousand board feet on Douglas fir and other west coast lumber certified by CPA as essential to veterans' housing program. Sec. Rev. Max. Price Reg. 26.

Copper — OPA *6532 — To keep the same relationship between the maximum base price of copper, which has been increased 2.375 cents per pound, and ceiling prices for copper scrap, copper alloy scrap and brass mill scrap, maximum prices of the latter have been increased. Amend. 6 to Revised MPR 20; and Amend. 10 to Revised Price Schedule 12.

Shade Cloth — OPA *T-4567 — Manufacturers' and wholesalers' ceiling prices for oil and pyroxylin coated window shade cloth and starch filled window shade cloth have been increased 15 percent. Amend. 15 to MPR 478.

Mohair and Yarns — OPA *T-4570 — Dollar and cent ceiling prices, higher than 1941 "freeze" prices they replace, have been set on sorted and partially processed mohair and yarns. Amend. 19 to Revised Price Schedule 58.

Cordage — CPA — Restrictions on the importation of manila and abaca cordage and products have been lifted. Amend. to GIO M-63 Manila or abaca fibre and two are still subject to M-63.

Miscellaneous Paper and other Items — OPA *6508 — Exemption or suspension from price control of a number of miscellaneous paper and other items, such as tags, pin tickets and marking machine tickets, friction tape, cigar boxes of paperboard, and fruit and vegetable wraps, is announced. Amend 23 to Sup. Order 129.

Yellow bar Laundry Soap — OPA *6519 — Retail ceiling prices for the main brands of yellow bar laundry soap have been increased one cent to two cents a bar. Amend 11 to MPR 390, and Amend. 8 to MPR 391.

Spearmint Oil — OPA *T-4560 — Producers and dealers' ceiling prices for spearmint natural oil have been increased \$1.50 a pound — approximately 40 percent. Amend. 7 to MPR 472.

Pig Iron — OPA *T-4564 — Pig Iron may be sold on and after May 29 on an adjustable pricing basis. Order 9 to Revised Price Schedule 10.

Water Transportation Charges — OPA *T-4551 — Price control has been suspended over transportation charges of contract carriers by water, such as on the Mississippi River, Gulf of Mexico, Atlantic Inland waterways or between United States Ports. Amend 84 to Rev.

Billings **FORGINGS**



tough or easy
it's always
"PRODUCTION"

Billings Forging Engineers are constantly designing or redesigning forged parts for every conceivable type of product—some tough, some easy... Why? Because these parts **MUST** be a production job—fast and in quantity... because we are forging specialists, and are always **PRODUCTION MINDED**

**If it's a Forging—
See Billings**

WRITE OUR FORGING DIV.
Creative or Production
Billings Forging Designers and
Production Engineers are available for consultation

No. 5

THE BILLINGS & SPENCER CO.
MAIN OFFICE AND PLANT
HARTFORD 1, CONN. U. S. A.



CASTINGS

- ★ Gray Iron
- ★ Semi-Steel
- ★ High Test Semi-Steel
- ★ Any Size up to one ton

Two modern foundries equipped for fast, efficient production can meet your casting requirements.

THE
**FOREST
CITY**
FOUNDRIES CO.

Member Gray Iron Research Institute

2500 West 27th St.
Cleveland 13, Ohio

PHONE PROspect 5040

SURPLUS SALES TO INSTITUTIONS TAKE SHARP UPSWING

Sales of surplus consumer goods to educational institutions took a sharp upswing during the first quarter of 1946, totalling well over \$10,000,000 in acquisition cost, the War Assets Administration reports.

Sales price of \$2,189,139.46 reflects the 40 percent discount granted to such institutions in consideration of the benefits which may accrue to the nation by use of such property in educational activities.

Individual sales during this period numbered 12,313, indicating wide distribution, with average purchases running under \$200, WAA officials stated.

In March both the number of individual sales and the dollar value involved were approximately double the January figures, as shown in the following table:

| No. of Sales | Dollars Received |
|--------------|------------------|
| Jan. 2,879 | \$ 506,971.05 |
| Feb. 4,608 | 2660,792.64 |
| March 4,826 | 1,021,375.77 |

Total 12,313\$2,189,139.46

The cumulative number of purchase orders received in the War Assets Administration's regional offices jumped from 1,179 during the week ending March 2, to more than 8,500 orders by April 15. Officials expect the trend to continue upward.

However, educational requirements for increased facilities, as computed by the U. S. Office of Education, far outweigh the present inventory of surplus property. For example, the dollar value need for engineering and technological research apparatus is 13 times greater than the March 23, 1946, WAA inventory; in maintenance supplies and building equipment, need exceeds inventory nine times; in school furniture and classroom equipment, six times.

The meagerness of WAA inventory compared with the millions of dollars worth of facilities in demand indicates that the requirements of education cannot all be met by the purchase of surplus property.

Lt. Gen. Edmund B. Gregory recently issued the following statement in reply to criticism of the War Assets Administration by Senator Harry F. Byrd of Virginia:

Contrary to the charge that the sale of surplus property has "bogged down", actual sales records show that disposals are increasing each month. The official records show that sales of surplus property in March were 2½ times greater than in last December. This steady upward progression is shown in the following sales figures: \$211,000,000 in December 1945; \$303, 000,000 in January \$412,000,000 in February; and \$492,000,000 in March and an expected \$660,000,000 in April.

The War Assets Administration fully recognizes civilian shortages and is cognizant of the serious dangers of inflation. On February 27, 1946, before the Senate Sub-Committee on Surplus Property, I said: "Liquidation of surplus now will

help get critically needed supplies into our economy while they are needed by consumers and industry during reconversion. Liquidation now will help offset inflationary forces resulting from current high purchasing power and relatively scarce supplies . . . will least interfere with employment and purchase . . . will remove the surface threat from postwar markets and will insure that the government gets the best return."

The public must not regard war surplus as an inexhaustible well of supply for desirable items for personal and household use. These materials were designed for one purpose — the winning of the war — and a large part of it is fit for war only. As an example of this we have in our inventory \$4,700,000,000 worth of non-salable combat aircraft.

Our procedures are being simplified. Our organization is new. We find it difficult to obtain experienced personnel. Office space especially in the sales areas is limited. In the future we will sell as much as possible on sites where the property is actually located.

The original cost value of surplus property acquired to date by the War Assets Administration is only 15 billion —not 32 billion dollars. It was originally estimated that probably about 32 billions of dollars of surplus would eventually reach our hands. It now appears that final declarations will probably not go over 20 billion dollars.

Of the 2 billion dollars of consumer goods declared to us, 1/3 (\$750 million) of the total consumer goods has only been declared to us during the last three months and 44% of the producer goods has only been declared surplus to us in the same recent period.

The broad distribution required by the Surplus Property Act necessitates offering surplus property to many priority claimants. Other factors which hinder the speedier disposal of surplus property are the great amount of paper work involved in transferring the surplus from owning agency inventory to War Assets Administration records; the inadequate Armed Service nomenclature for civilian sales purposes; the necessity for clearing plants of war machinery not needed by the purchaser, and the fact that the declared surplus goods are located in more than 5,000 storage points throughout the U. S.

1 1 1

WAA CREATES SURPLUS ADVISORY AND CONSULTANTS DIVISION

An advisory Committees and Consultants Division has been established within the War Assets Administration, it was recently announced.

This action is intended to expand considerably the use of individual consultants drawn from industry as another means of increasing the disposal of government-owned surpluses. The use of advisory committees representing many different industries and levels of business which have met with representatives

(Continued on page 328)

To get *more* for your valve dollar consult **POWELL Engineering**



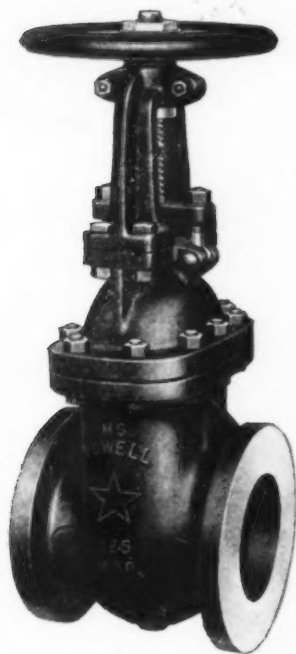
No one would expect a burro to pull a load that requires a heavyweight draft horse. But a sure-footed burro is just right for carrying a pack on a mountain trail where the power of a draft horse would be wasted.



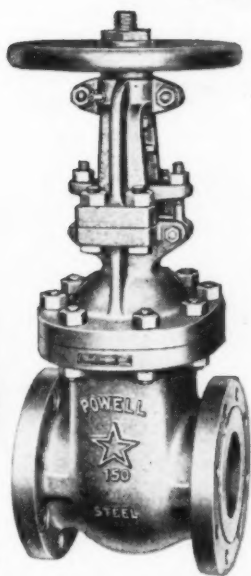
And yet when it comes to valves, such "misapplication" is often encountered. *Many cases of failure are directly due to expecting service from a valve which it was not designed to give.* Consequent replacements are costly. On the other hand, it is not sound economy to use a valve of more expensive construction than the particular service requires. The Powell Line* of Bronze, Iron, Cast Steel and Corrosion Resistant Valves, is so *complete* that there's a POWELL Valve that's *just right* for every flow control condition encountered in modern industry. When you need valves for new installations or for replacements, don't risk "misapplication". Consult POWELL Engineering and *get more for your valve dollar.*

The Wm. Powell Company, Cincinnati 22, Ohio

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

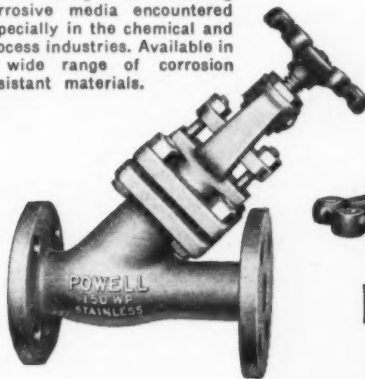


Large Iron Body Bronze Mounted Gate Valve for 125 pounds W. S. P. Made in sizes 2" to 30", incl. Has flanged ends, outside screw rising stem, bolted flanged yoke and taper wedge solid disc. Taper wedge double discs can be provided in sizes 2" to 12", incl. Seat rings and stem are bronze. Disc is bronze in 3 1/4" and smaller size valves and bronze faced in the larger sizes. Also available in All Iron for certain services.



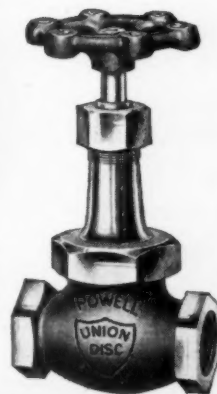
Class 150-pound Cast Steel Gate Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke and taper wedge solid disc. A sturdy valve, designed for services in which bronze or iron valves are inadequate. Powell Cast Steel Valves of all types are available in pressure classes from 150 to 2500 pounds, inclusive.

Small "Y" Valve for 150 pounds W.P. Made in sizes 1/4" to 2", incl. Has flanged ends, bolted flanged yoke, outside screw rising stem and plug type disc. This is one of many special Powell designs for handling corrosive media encountered especially in the chemical and process industries. Available in a wide range of corrosion resistant materials.



Small Bronze Globe Valve for 150 pounds W. S. P. Made in sizes 1/4" to 3", incl. Has screwed ends and union bonnet. Regularly furnished with renewable vulcanized composition disc for steam service, but special discs are available for other services.

*In writing for catalogs kindly specify the service conditions under which the valves, in which you are interested, must operate.



Small Bronze Globe Valve for 200 pounds W. S. P. Made in sizes 1/4" to 3", incl. Has screwed ends, union bonnet, renewable, specially heat-treated stainless steel seat and regrindable, renewable, wear - resisting "Powellium" nickel-bronze disc. A long-life valve, designed to stand up under severe service conditions.

POWELL VALVES



C. O. Goff, (left) Assistant Sales Manager of Wallace Barnes Company - Division of Associated Spring Corporation, explaining fine points of a precision mechanical spring to R. Hulbert, Director of Purchasing of New Britain Machine Company, New Britain, Conn.

"The P. A. Puts Quality and Performance First!"

"Quality and performance are uppermost in the P.A.'s mind," says C. O. Goff, Asst. Sales Manager of the Wallace Barnes Co. "Price is important only after I establish the suitability of my products - so it naturally follows that I keep him informed."

Experienced sales executives like Mr. Goff know that sales depend on keeping the P.A. fully informed on the quality and application of their products. And they also

know there's no better way of keeping him informed than by advertising in **PURCHASING** - the purchasing agent's own magazine. It saves a lot of valuable time when salesmen call at his office.

For complete facts regarding this productive, economical magazine, write **PURCHASING**, 205 East 42nd Street, New York 17, N. Y. Offices in Chicago, Cleveland, and Los Angeles.

**A CONOVER-MAST
PUBLICATION**

A good man to know . . .
A good man to know you.



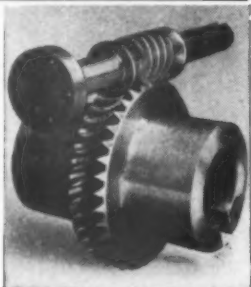
The experiences and opinions of leading sales executives form the basis for advertisements like the one at the left. These advertisements appear consistently in leading national publications read by sales, marketing and advertising executives.

Each advertisement emphasizes the importance of the Purchasing Executive as the key man in successful marketing of any product used in industry.

SIMONDS GEARS

QUALITY GEARS
OF ALL TYPES

SPUR • BEVEL
MITRE • RACKS
WORMS
WORM GEARS
Cast and Forged
Steel, Gray Iron
Bronze
Silent Steel
Rawhide, Bakelite
Made to Your
Order



Simonds Gears are made to meet the strictest demands—the result of over 50 years' experience and master craftsmanship in building quality gears. Large sizes are a Simonds feature—spur gears are cut up to 12 feet in diameter.

*Distributors for RAMSEY
Silent Chain Drives and Couplings*

**THE SIMONDS
GEAR & MFG. CO.**
25TH AT LIBERTY
PITTSBURGH 22, PA.

A COMPLETE LINE OF INDUSTRIAL PETROLEUM PRODUCTS

A Pure Oil engineer will help solve your lubrication problems. Write nearest office, or Industrial Lubrication Dept., Chicago, Ill.

The Pure Oil Company, U. S. A.

Be sure



with Pure

(Continued from page 324)

of the War Assets Administration and its predecessor disposal agencies and with appropriate government officials will continue primarily at the Washington office.

Under the operations of the new division, these facilities will be established at each of the 33 WAA regional offices. The immediate problems of surplus property disposal at all levels of business will be under constant review, out of which solutions and recommendations will develop. The trade organizations will be requested to assist in this entire program.

1 1 1

AIM TO SAFEGUARD ROSIN SUPPLIES

To safeguard rosin supplies for domestic housing and reconversion needs, exports will be held to 250,000 drums for the six months period ending September 30, 1946, John D. Small, Administrator of the Civilian Production Administration, said in a letter to rosin producers and consumers.

This export ceiling will prevail, Mr. Small said, even though rosin production in this country may exceed demand during the second and third quarters of this year.

Mr. Small pointed out that rosin is an important component in the production of paints, plywood, wallboard, rubber, linoleum and more than 300 other housing and reconversion products.

"In consequence of these demands," Mr. Small declared in the letter, "the Civilian Production Administration is opposed to removal of rosin export quotas."

"It is our view that these quotas must be retained at a level—as from time to time we can determine—that will protect the future rosin supplies of essential American industries."

Permitted rosin exports for the full year ended September 30, 1946 will total about 350,000 drums or approximately 38 per cent of total annual production of 1,318,000 drums (in the twelve month period ended March 31, 1946). This compares with a pre-war export demand of more than 50 per cent of total production, according to CPA's Chemical Division.

Mr. Small's letter said further that during the second and third calendar quarters, the peak gum producing season, total production of rosin exceeds domestic consumption, plus normal exports. During the other two quarters of the year, the combined total production of both gum and wood rosin falls far short of the current demands. Accordingly, he said, it is necessary, during the second and third quarters, to produce more rosin than is being consumed and exported.

"Should the present export quotas be removed, or substantially increased," Mr. Small declared, "all current surplus production would be swept from the market. This would result in a grave rosin shortage during the gum non-producing period, later this year and early in 1947."

WAA COMPLETES PLANS FOR FASTER SURPLUS DISPOSAL

The War Assets Administration announces that plans have been completed for an accelerated selling program which permits surplus war property in vast and various quantities to become more accessible to purchasers.

Within the near future WAA will speed the flow of war surplus to the public through a system of disposal to be described as "sales at site." All priority claimants and small business will be adequately taken care of at these sales.

As another important means of making war surpluses a part of the nation's reconversion pattern, in addition to existing methods, WAA will schedule these sales at site for areas of the country where major quantities of surplus war property are now located. The sales will be put into action as swiftly as adequate mechanical means and manpower can be mobilized.

Warehouses of military bases, naval establishments and war plants, where war surpluses are now stored, will be the scenes of this method of sales. Sales at site disposal methods will permit prospective purchasers who visit sale sites to inspect merchandise, select what they want to buy, pay their money and depart with their purchase or have them shipped to designated destinations.

This system for extending operations for surplus disposal will not supplant or slacken momentum of current sales practices of WAA.

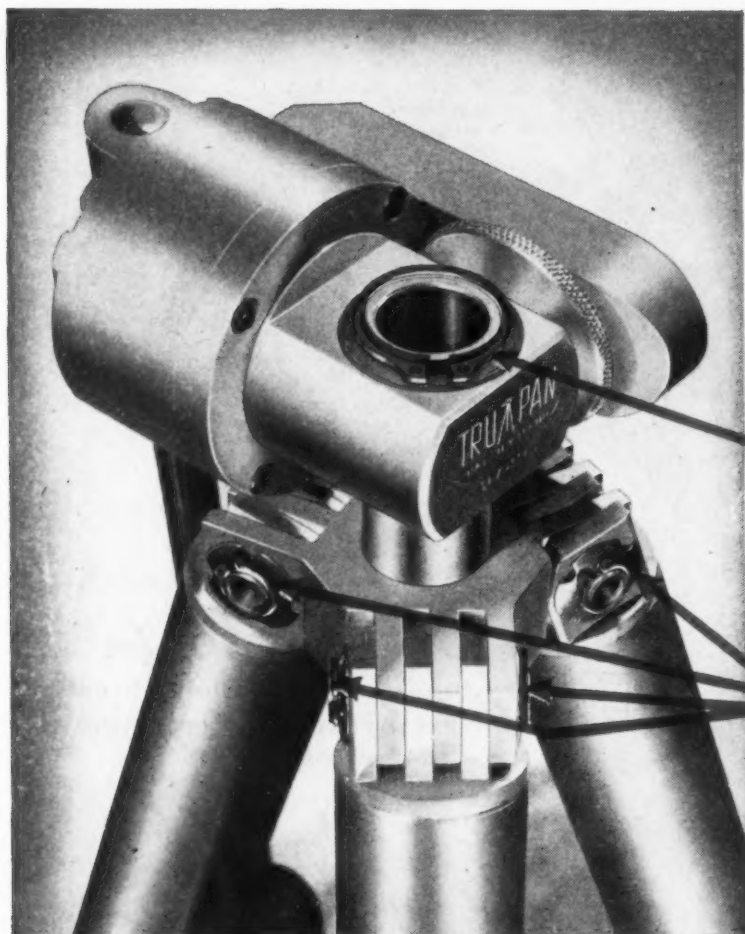
The sales at site system will entail installations of a complete selling staff at each of the surplus property storage centers. These selling sites will be operated as sub-regional offices of WAA and will be sufficiently staffed to assure their working as self-contained units. The 33 regional offices of WAA, currently the pivotal surplus purchasing points for the public, will shed systematically all selling responsibilities and retain only administrative supervision and accounting operations, ultimately permitting the sub-regional offices to do all selling of war surplus through the come-and-get-it sales at site method.

1 1 1

HARTFORD NAVAL DISPOSAL OFFICE CLOSED

Material Redistribution and Disposal Office, 115 Broad Street, Hartford, Conn., was officially disestablished on June 30, 1946. Future sales of material located in the Hartford area will be handled by the Material Redistribution and Disposal Office, U. S. Naval Drydocks, Building 21, South Boston 10, Mass., and by the Material Redistribution and Disposal Office, 342 Madison Avenue, New York 17, N. Y. for material located within Fairfield County, Connecticut. Announcement of this change was made by H. L. Miller, Lt. Comdr. SC, USN, Officer-in-Charge.

HOW WALDES TRUARC BOWED RETAINING RINGS GIVE PRE-DETERMINED TENSION!



Trupan Tripod Manufactured by Accmatool Co., Inc., N. Y. 25

Waldes Truarc precision retaining rings eliminate costly machining by replacing nuts, shoulders, collars and cotter pins. They allow lighter, more compact units—make assembly and disassembly quicker, easier. Truarc rings give better, more dependable retention because their mathematically precise construction insures lasting, perfect circularity—insures a never failing grip. There's a Truarc ring for every mechanical product.

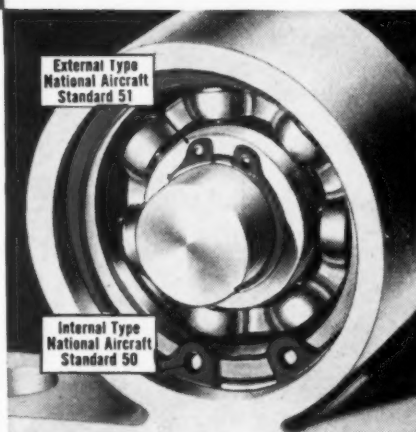
WALDES
TRUARC
TRADE-MARK
RETAINING RINGS
WALDES KOHINOOR INC., LONG ISLAND CITY 1, NEW YORK



NINE TRUARC RINGS ELIMINATE EXPENSIVE MACHINING ON ACCMATool "TRUPAN" TRIPOD

Use of 9 TRUARC retaining rings in manufacture of the TRUPAN Tripod has resulted in a light, compact design—with reduced production costs. Truarc rings eliminate expensive machining required for nuts, threads, screws and shoulders.

- 1 A Truarc Bowed ring and a standard Truarc ring position the vital center pivot pin. The bowed ring exerts a downward pressure of 50 lbs.—gives two-way spring action—*takes up end-play resiliently*. "Shimmy" from cumulative tolerances in manufacture, or from constant wear is eliminated.
- 2 Each leg is positioned on its hinge by a spring washer and a standard Truarc ring mounted a either end of a small steel hinge pin. This construction assures constant tension. The Tripod set up accurately without adjustments, indefinitely.



FREE!

Mail this coupon today for technical data sheets describing the Bowed and other newly developed Truarc Retaining Rings.

REG. U. S. PAT. RE-18,144

Waldes Kohinoor, Inc., Dept. 30D, Long Island City 1, N. Y. Please send me technical data sheets on the newly developed Truarc Rings.

Name & Title _____

Company _____

Address _____

City _____ Zone _____ State _____



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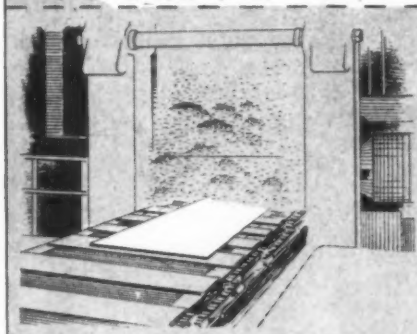


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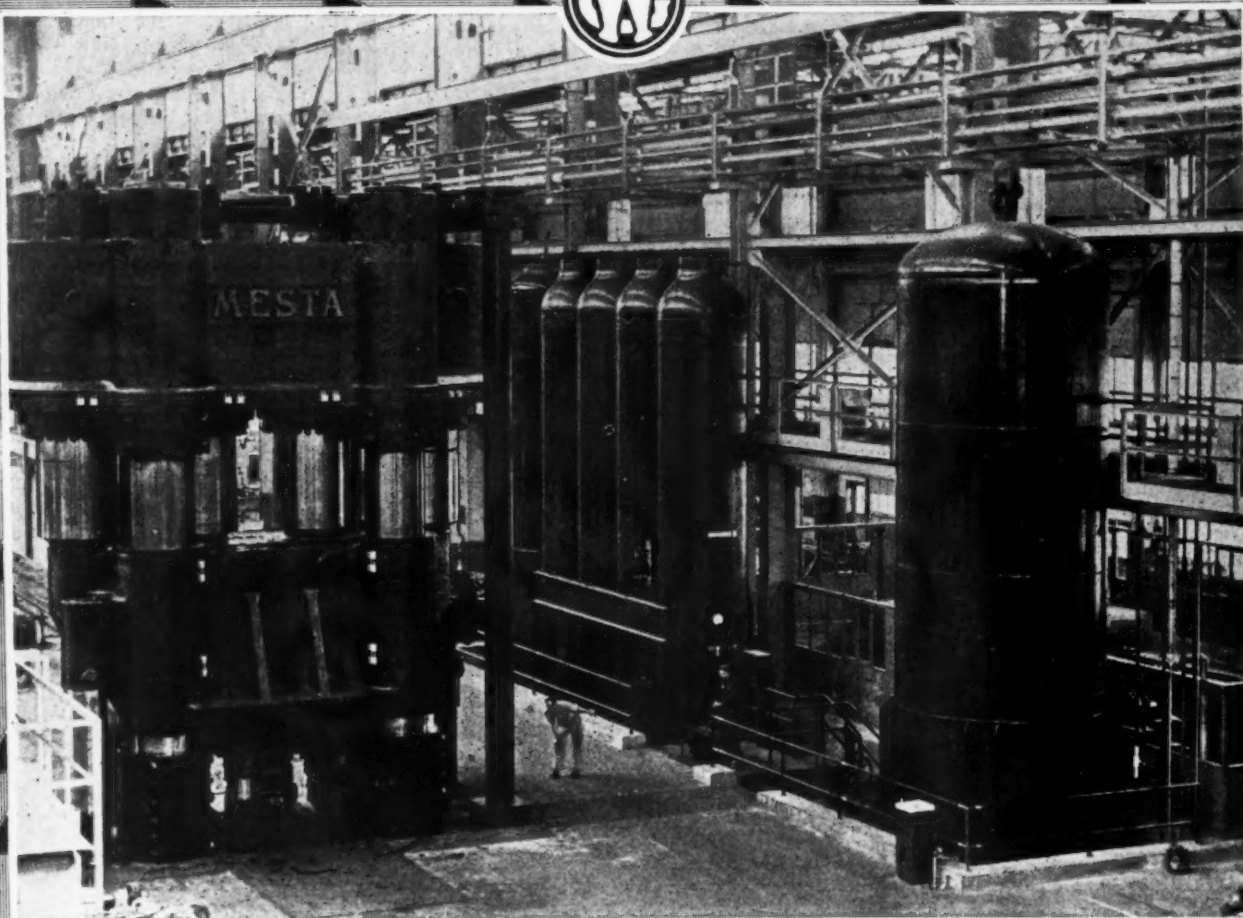
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COMPOSITE TOOL STEELS
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THE 18,000 TON PRESS now installed at Wyman-Gordon Products Corporation, a wholly owned subsidiary of Wyman-Gordon Company, is the largest press and probably the largest single piece of machinery of any kind in America. It being operated for the account of Reconstruction Finance Corporation for experimentation in, and development and production of large light metal forgings. The availability of this equipment removes the size limitations which have heretofore existed in this country on forgings of magnesium and high strength aluminum alloy.

WYMAN - GORDON PRODUCTS CORPORATION

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Pat'd.
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FLEXLOC

**"...thin nuts made thus,
are especially superior."**

That's only one of the many reasons why "Flexloc" self-locking nuts will prove a wise buy. Just look at these advantages:

- ✓ It's all in one chunky piece and can, therefore, stand up under severe punishment
- ✓ Every thread — including locking threads — takes its share of the load
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Sizes from No. 6 to 1" diameter; millions upon millions in use. Write for Bulletin 582. The famous "Unbrako" Socket Screw and "Hallowell" Shop Equipment Products are also made by us.

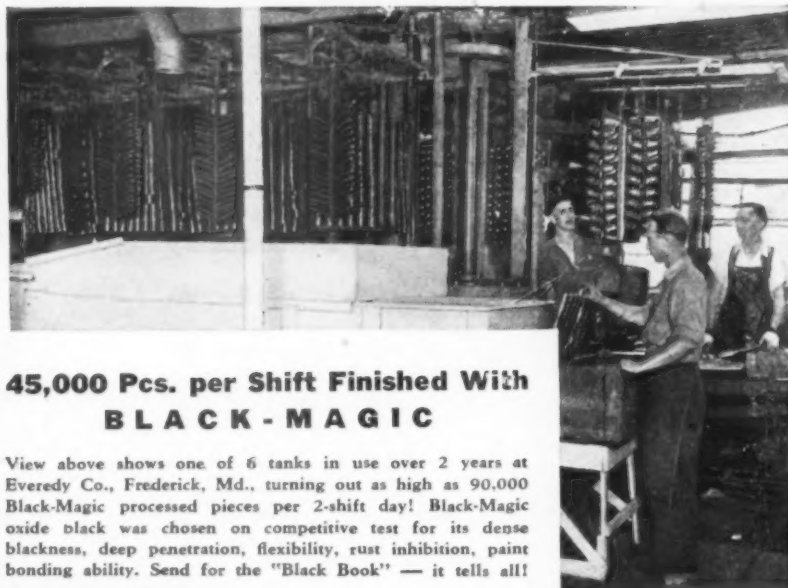
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SILCO — A new glass base spray coat for steel & brass. Extremely tough. Stands heat up to 1000° F. Highly corrosion resistant. Soft eggshell finishes in any color. Thousands of applications. Easy to work in almost any industrial plant. Write for details.

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URGE RETENTION OF UTILITIES ORDER U-2

The Telephone Operations Industry Advisory Committee unanimously urged the Civilian Production Administration not to revoke the utilities order (U-2) at this time. This is the order which gave preference for telephone service to the military, business, veterans and their families and in cases of illness or disability.

Members said that the current telephone situation is not what the industry expected it to be when they met last September. Generally, industry has received more than three times the number of new applications they had expected and less than half as many disconnections as anticipated.

In asking CPA not to revoke the order at this time industry representatives made three additional points:

1. They are still facing the same difficulties that first made the order necessary.
2. They see no prospect of the situation easing up in less than six months.
3. Similar regulation by local bodies might be impracticable because some states have commissions with adequate powers, but commissions in other states do not have such power and some states have no commissions at all.

The committee stated that while they were having difficulty getting equipment, their greatest problem was lead for the manufacture of cable. They explained that they had already reduced the amount of lead used for cable sheathing and had made other design changes to effect every possible saving in the use of lead. They urged CPA to do everything possible to increase their allotment of the scarce material.

1 1 1

SURPLUS SALES AT SITES STEPPED-UP PROGRAM

The War Assets Administration announces that private concerns with proven ability will be employed to expedite disposal of surplus war property to be sold under WAA's stepped-up sales at site program.

These concerns will participate in the program on a cost-plus-fixed-fee contract. WAA will set the price on war surpluses to be sold.

Simultaneously, WAA declared that by September a large number of sales at sites will be underway all over the nation, with potential purchasers of war surpluses enabled to inspect merchandise, make selections and payments and acquire purchases quickly.

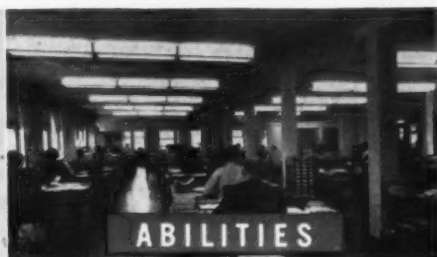
Sales at site supervised by private concerns under WAA control will be original sales of property declared surplus to WAA by owning agencies and will in no wise constitute a re-sale of any war surpluses. Private concerns which have successfully contracted with the federal government for engineering, management, construction and operational

(Continued on page 336)

New Gasket Materials! *Better Answers to New Product Problems; Old Ones, Too!*



FACILITIES



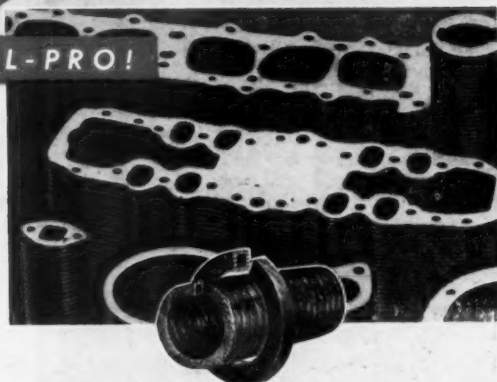
ABILITIES



PRODUCTS



THAT'S FEL-PRO!



SUPERIOR PACKINGS . . . New properties! New constructions! In these advanced packings, mineral and vegetable materials, and various synthetic plastic preparations, are woven, combined and formed — or are sheathed with, or combined with different metal foils — to set new performance standards in handling conditions imposed by extreme temperatures, compression, acid, oil, caustic, etc. Ask about these successful new packings!

New Abilities in Materials Provide New Possibilities in Design, Performance

Consult Fel-Pro! Engineers who are working on new products or redesigning old ones find many of their gasket, packing and sealing wants anticipated here at Fel-Pro. Here, new processing has greatly widened the usefulness of many conventional materials, and new synthetics with new characteristics are answering new problems and better answering old problems.

Suppose, for example, that you wanted new mechanical properties in a dielectric material, or an oil-

resisting gasket that retained a certain, measurable resilience despite new heat conditions, or a packing that remained indifferent to acid under a new set of circumstances: Ask Fel-Pro. If it isn't already here, we will develop it here for you! So, either way, whether you seek something you didn't think existed before, or want to do an everyday job better, it should pay you to write and see if Fel-Pro can satisfy your want. . . . FELT PRODUCTS MFG. CO., 1514 Carroll Ave., Chicago 7, Illinois.



Sealing Materials, Gaskets, Packings, Sound- and Vibration-Dampening Materials, Specially Treated, Die-Cut and Fabricated by Fel-Pro.



Since 1903

Strand Flexible Shaft Machines have answered the call for portable, rotary power with efficiently designed, solidly constructed flexible shaft machines that insure constant speeds with dependability and greater operator convenience.

If your job calls for grinding, polishing, buffing, sanding, drilling, reaming, screw-driving or nut-setting—especially in out-of-the-way places, a Strand machine will do it faster, better, and stand up to it longer. Hundreds of attachments can be easily interchanged. 125 types and sizes. Models include vertical and horizontal type machines from 1/8 to 3 H.P. Distributors in all principal cities.

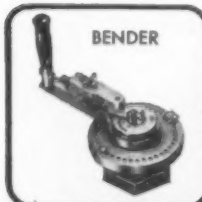
Send today for 112 page catalog showing complete line.



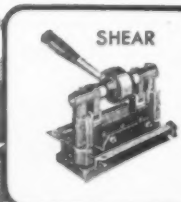
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for
Catalog



O'NEIL-IRWIN MFG. CO.

305 EIGHTH AVE. SO., MINNEAPOLIS 15, MINN.

Dangers of Escalation

(Continued from page 123)

a certain percentage of the unit price; and that no price increase will go into effect until proper proof has been submitted showing clearly how much labor or material costs have increased or decreased. To prevent after the fact disagreement, a statement by the seller should be included in the original contract showing a breakdown of his estimate of labor, material and overhead. It might also be wise to include a statement that the buyer has the option to cancel the contract upon notice of an increase. The practical objection to this form of escalator clause is the administrative work involved.

I would like to leave these thoughts with you:

First of all, to adequately cope with escalation quotations, buyers must know values and should develop knowledge of price analysis techniques. They must exhaust all competitive sources.

Secondly, they should obtain the co-operation of those who determine requirements so that every effort can be made to avoid unwarranted extended deliveries.

And thirdly, if escalation is unavoidable, be sure the clause gives the utmost consideration to the buyer—that it provides increased prices for actual increased costs only and does not include increases for general overhead; that an option for cancellation is included depending upon the urgency of the need; that only proportionate increases are permitted when escalation is tied to a price ceiling; and that provision is also made for price decreases in long-term contracts.

Above all never lose sight of the fundamental consideration—that

fighting escalation is resisting inflation.

In conforming to that last viewpoint, Federal purchasing men are also adhering in every way possible to the principle that the proper function of democratic government is to preserve the conditions under which markets can operate fairly, freely, and under genuinely competitive conditions. The restriction of inflation by discouraging the use of escalator clauses is one method of preserving from self-destruction our traditional system of private enterprise. Although some may vigorously oppose the ways and means which are employed in achieving the goal, no one certainly can find fault with the ultimate objective.

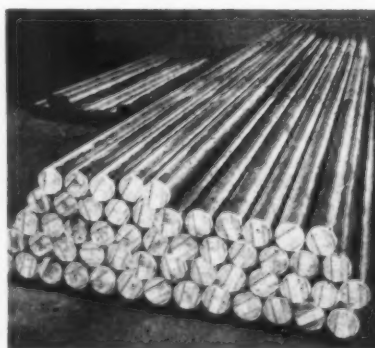
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Escalator Clauses

(Continued from page 120)

convention speakers, we very likely will continue in the present sellers' market for the foreseeable future, and OPA controls will continue to be exercised though the list of products affected will grow progressively smaller. Since production will make no appreciable inroads on the backlog of unprecedented civilian demands, it will continue to be necessary to buy in advance in order to secure the necessary delivery protection and to use escalator clauses to protect us price-wise.

There is no ideal escalator clause suitable for universal use. Rather discretion and good judgment are needed, with particular emphasis to guard against the false security which these clauses might engender. We all have a wonderful opportunity to make the buyers' escalator clauses a very useful tool.

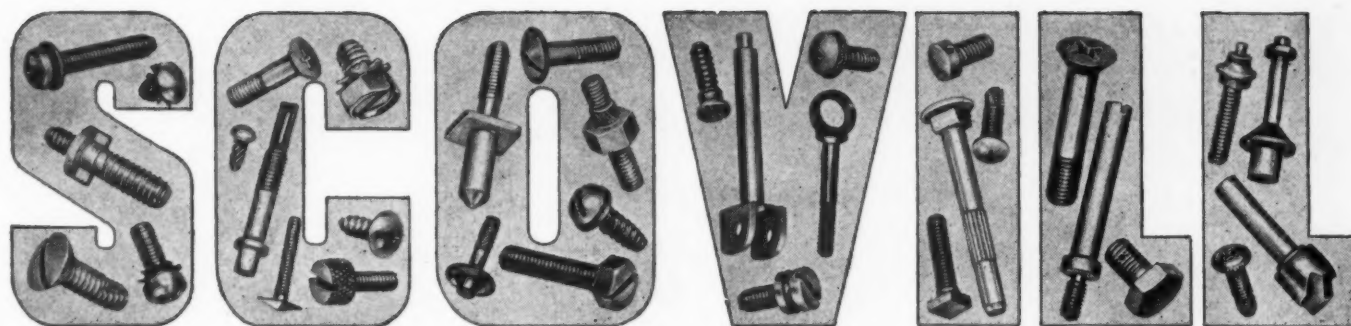


Welded Stainless Tubing

4" to 14 3/4" O.D.

Uniformity in roundness and in quality of welding characterizes Pittsburgh Piping Welded Stainless Tubing. Available in most stainless alloys, in sizes 4" O.D. to 14 3/4" O.D., and in wall thicknesses ranging from 7/64" to 1/2". Write for data sheet.

PITTSBURGH PIPING & EQUIPMENT CO. 10 FORTY-THIRD ST., PITTSBURGH, PA.



**COLD FORGING
MADE THIS BETTER
PRODUCT POSSIBLE**



Proof #40 of Scovill
cold-forging skill

★ For production efficiency, call Scovill on these standard fastenings, too . . . Phillips Recessed Head Screws . . . Clutch Head Screws . . . Sema Washer-Screw Assemblies.



The part shown here is another instance where Scovill cold-forging ingenuity and equipment helped improve a product — and also resulted in more efficient production.

The problem was to devise a better fastening for sink washers than the old-style metal ring — a new kind of fastening that simply would not pull out.

The problem was partially solved by designing the stud shown in the illustration at the left. Scovill cold-forging skill then solved the next and major part of the problem — how to produce the stud economically. Here again Scovill fastenings experts combined a practical knowledge of what to do — plus how to do it.

Scovill experts in cold-forging for special fastenings have helped many manufacturers reduce assembly time, cut costs, and produce better products. If you would like to improve a product through better fastenings — or if you have a product needing fastenings that is in the design stage now, call one of the Scovill experts listed below. It will not obligate you.

SCOVILL MANUFACTURING COMPANY
WATERVILLE SCREW PRODUCTS DIVISION

WATERVILLE 48, CONN.



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District Sales Offices: Cleveland, Cincinnati, Birmingham



(Continued from page 332)

services during the war years and any others which believe they can meet qualifications set by WAA will participate in the sales at site program.

Under contracts framed to follow experience gained by the Army and Navy in similar agreements, private concerns will undertake stock control, sales and accounting work essential to effective efforts to provide additional sales outlets for surplus war property.

A smaller number of "pilot" contracts are being executed currently by WAA with private concerns with a view to expanding this practice as the early stages of WAA's augmented sales program progress.

Private concerns, WAA explained, will not undertake a new type of disposal activity but will supplement efforts of the War Assets Administration to open more and more surplus disposal depots, with all operating under the same regulations and provisions prescribed by the Surplus Property Act.

Veterans, priority claimants, small businessmen and other groups will be served at sales at sites operated by private concerns in precisely the same manner they are served at sales sites conducted by WAA personnel. Likewise, all goods to be sold will be priced in conformance with present pricing procedures and all other normal conditions of sales will be followed.

1 1 1

SURPLUS AUTOMOBILE PARTS AVAILABLE THROUGH DETROIT REGION

The War Assets Administration announces that inventory of all surplus automotive parts has been completed. The inventory disclosed that parts valued at approximately \$174,000,000 are available through the Detroit region.

All declarations of surplus automotive parts, accessories and maintenance equipment, are channeled to the Detroit region to form a central inventory.

Orders from all regions are cleared through the Detroit regional office. This procedure, WAA said, is designed to speed the disposal of parts with a minimum of delay.

1 1 1

SOUND-KODACHROME MOTION PICTURES ON GRINDING

"Lessons in Grinding" is title of booklet issued by the Norton Co., Worcester, Mass., describing a series of 16 mm. kodachrome motion pictures with sound for apprentice and student education. The films are lent without charge with the understanding that they will be handled and projected by experienced operators with dependable equipment, and returned in good condition express prepaid. The films cannot be used on a silent projector. Subjects are as follows: Cutter Sharpening; The Cylindrical Grinders; The Surface Grinder; The Grinding Wheel, its Care and Use; Grinding Carbide Tools; Grinding Wheel Markings; Grinding Wheel Safety.

**The shortest
distance between
your plant
and steel is**



Rely on these five *PURDY* extras!

STEEL TECHNICIANS—*Purdy* desk salesmen—skilled in steel—are ready at your call to recommend the correct type of steel for your job. If, due to current conditions, a temporary shortage exists, they will advise on a suitable substitute.

LARGE STOCKS—Our inventory includes the largest stocks in items carried, and heavy tonnages are coming in regularly to insure a dependable supply.

FAST DELIVERY—Non-fabricating orders are shipped out on our own fleet of trucks within 24 hours of receipt of order. Where special sizes are specified, modern, high capacity equipment insures precision work and quick handling.

SPECIAL TELEPHONE SERVICE—In New Jersey, New York or Connecticut, please check the *Purdy* phone service. Prompt, direct wire connection to A. R. PURDY CO. is available in most localities at your usual local charge.



EXPERIENCED FIELD MEN—*Purdy* field men, trained to help work out your steel problems are available for consultation. When you need advice on steel—call in a *Purdy* man.



*The Planet Line
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STAINLESS
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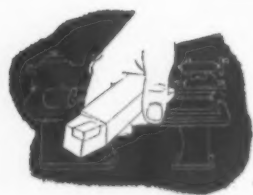
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CEMENTED CARBIDE
TOOLS, BLANKS,
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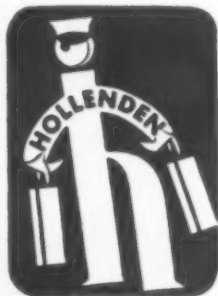
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HOME OF THE FAMOUS

**VOGUE
ROOM**

1000 ROOMS WITH BATH
RADIO IN EVERY ROOM
FIVE FINE RESTAURANTS
Central Downtown Location

A Working Convention

(Continued from page 87)

leading firms, only four are members. In the radio and electronic industries, eight out of sixty companies are members. These are not isolated cases. Yes, we have a long way to go before our activities and our benefits reach out to all companies. Local association activity should not be on the basis of a socially select club; it is for everybody engaged in purchasing work.

Our conventions are planned to be of service to each member and to each member's company. However, there is more that can come of these meetings. The experiences of fellow members in association work will help you build your local association. Talk it over with the fellow next to you. Purchasing is a service or staff function. It renders a service to business. Likewise an association must render service to its members. Good association activity promotes good purchasing agents. Let us make this a year of better purchasing. By service we can hold and add to the association gains we have made.

Welcome to Chicago! Every member of our association wants to help you enjoy your stay. Please call on us if we can be of any service to you.

Welcome to an outstanding convention! Welcome to a program that will make you proud that you belong to the National Association of Purchasing Agents!

Messages to the Convention

(Continued from page 127)

prices started soaring. Competition for limited supplies would become accentuated. The tendency to hoard, to accumulate inventories, to gamble on the prospect of higher and still higher prices would overshadow prudent business practice. The dangers of the inevitable crash, inventory losses, and business failures cannot be ignored.

You men who are in the daily business of watching prices and supplies must be keenly aware of these pitfalls, should prices start skyrocketing. Elimination of all controls at this point would be the sure way to start the vicious spiral of rising costs, demands for higher wages, consumer strikes against mounting living costs, factory close-downs, and the inescap-

able hardships that would surely follow. A steady flow of supplies at stable prices certainly must represent an ideal situation for purchasing agents. It also represents the goal of the stabilization program.

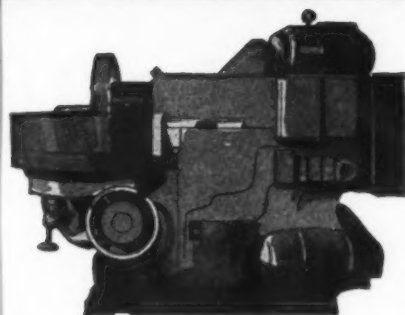
Let me assert that these controls are temporary emergency measures. We are removing controls as rapidly as it is safe to do so, and will continue that policy.

We are facing a most critical period during the next few months. Let us not sacrifice for quick profits the great and confident America we can become. We still have a wartime job to finish. All of us, working together, can do the job. I am sure I can count on you for help.

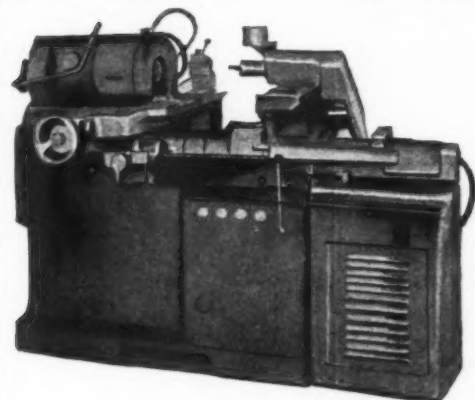
PAUL A. PORTER
Administrator,
Office of Price Administration

15,996 GRINDERS

External Cylindrical, Plain. 1730 of these machines with swings from under 6" to 20" are warehoused in the Boston, Chicago, Cleveland, Detroit, Philadelphia, St. Louis and New York areas.



M. Horizontal Spindle Surface Grinder. Here is a modern rotary table type machine which can be obtained in Chicago, Cleveland, Detroit and St. Louis in sizes ranging from 12" to 30" table diameters.



H. Internal Cylindrical, Hydraulic Feed. These modern production machines are available in quantity in Cleveland and Detroit and in smaller amounts in other W.A.A. offices. These are precision tools with many applications to post-war production needs.

GOVERNMENT-OWNED SURPLUS PRODUCTION EQUIPMENT

Take your pick of these modern, high-speed tools left over from war. Here by the hundreds are the grinders you need to complete reconversion or finish tooling up for new post-war products. These machines are ready to go to work for you at once. To secure specifications, price and shipping information, simply check the coupon below. Or, if you wish to see the equipment call your nearest W. A. A. office to help you make the necessary arrangements.

SPECIAL GRINDER BUYS!

| KEY | TYPE | SIZE OR CAPACITY | QUANTITY AVAILABLE NOW |
|-----|--|------------------------------------|------------------------|
| A | External Cylindrical—Plain | Up to 20" swing | 1730 |
| B | External Cylindrical—Universal | Up to 16" swing | 347 |
| C | Centerless—Internal and External | All sizes | 607 |
| D | Cam | | 223 |
| E | Crank Pin | | 83 |
| F | Valve | | 243 |
| G | Internal Cylindrical—Mech. Feed | All sizes | 320 |
| H | Internal Cylindrical—Hydraulic Feed | Up to 42" swing | 1094 |
| I | Internal Cylindrical | Under 12" swing | 151 |
| J | Internal Cylindrical—Auto Six. Comb. Hole & Face | 16" swing and over | 127 |
| K | Internal Cylindrical—Auto Six. Planetary Type | Under 16" Diam. | 39 |
| L | Internal Cylindrical—Auto Six. Centerless | Up to 28" Diam. | 146 |
| M | Surface—Horiz. Spindle Rotary Table | All size table diam. | 274 |
| N | Surface—Vertical Single Spindle Rotary Table | 12" to 48" Table diam. | 157 |
| O | Surface—Reciprocating Horiz. Spindle—Hand Feed | 12" length work cap. and over | 146 |
| P | Surface—Reciprocating Horiz. Spindle—Power Feed | Under 18" to 120" length work cap. | 840 |
| Q | Thread—External only | All sizes | 635 |
| R | Thread—External & Internal | 8" Cap. and over | 82 |
| S | Tool & Cutters | All sizes | 691 |
| T | Drill | A-1 sizes | 348 |
| U | Single Point Tool | All sizes | 458 |
| V | Bench—Double End | All sizes | 2876 |
| W | Bench—Single End | Up to 8" Wheel Diam. | 1103 |
| X | Floor—Double End—Dry | Up to 24" Wheel Diam. | 831 |
| Y | Floor Comb.—Wet & Dry | 10" to 16" Wheel Diam. | 216 |
| Z | Snag—Swing Frame | | 153 |
| AA | Comb. Grinder & Buffer | | 1803 |
| BB | Race Radius—External | | 118 |
| CC | Race Radius—Internal | | 72 |
| DD | Contour Profile | | 75 |

CHECK AND MAIL TODAY!

To War Assets Administration*: Without obligation, please send me detailed specifications and price data on the following checked items:

| | | | | |
|---|---|---|---|----|
| A | G | M | S | Y |
| B | H | N | T | Z |
| C | I | O | U | AA |
| D | J | P | V | BB |
| E | K | Q | W | CC |
| F | L | R | X | DD |

Grinder check list

Key letters correspond to items shown in list at right. Simply check the key letter of the items in which you are interested.

Name.....Telephone No.....

Firm.....

Address.....

City.....State.....

*For W.A.A. address see 4th page of this advertisement. 277-5

All items shown on these pages are offered subject to prior sale. This surplus property has previously been advertised and offered to prior claimants including Veterans of World War II.

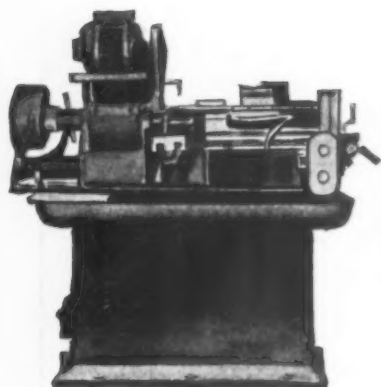
EXPEDITING COUPON Free Information, Check and Mail Today

To War Assets Administration*: Please send me specifications, prices and other pertinent information on the items listed below:
(To save writing simply use the key numbers shown in the left hand column of the list at right.)

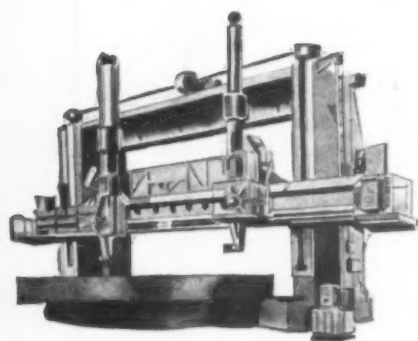
Name Telephone No.
Firm
Address State
City
*For W.A.A. addresses see 4th page of this advertisement

277-5

GET



25. Automatic Screw Machine-Bar. This single spindle, indexing turret tool is typical of the 1975 such tools available now in Detroit, Cleveland, Nashville, and Philadelphia.

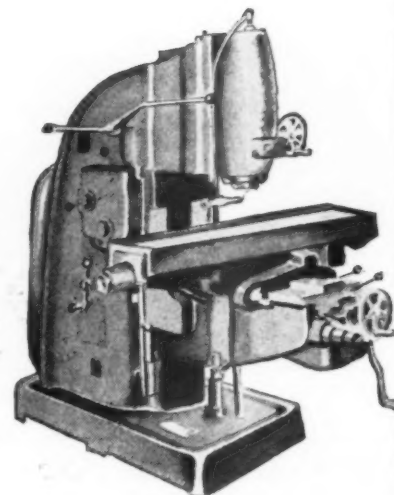


2. Vertical Boring and Turning Mill. These huge, heavy duty machines may be obtained in sizes from 36" to 120". They are available in all sizes in Detroit and in most sizes in several other W. A. A. offices such as Chicago, Cleveland and Philadelphia.

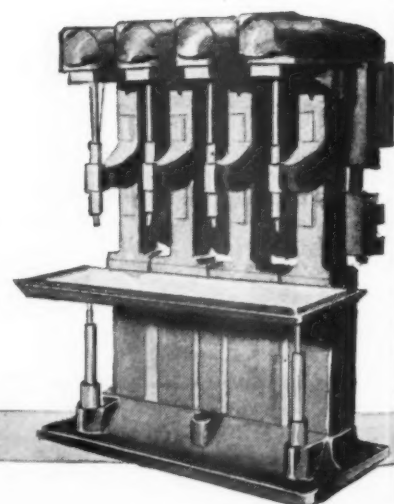
6. and 7. Box Column, Single Spindle Drill. 474 machines of this type with capacity up to 1" and swings up to 24" are in warehouses in Cleveland, Chicago, Detroit, New York, Philadelphia and St. Louis.



29. Vertical Universal Miller. In Boston, Chicago, Cleveland, Detroit and New York areas there are 847 of these machines in all sizes and types ready for immediate application.



15. Sensitive Floor & Pedestal Drills — Box Column. There are 3142 of these drills 1/2" capacity and over, 12" swing and over, located in Detroit, Boston, San Antonio, Denver, St. Louis, Spokane, Cleveland, Chicago and New York.



Veterans of World War II—To help you in purchasing surplus property, Veterans' units have been established in each War Assets Administration Regional Office.

KEY
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THEM NOW!

GOVERNMENT - OWNED SURPLUS MACHINE TOOLS

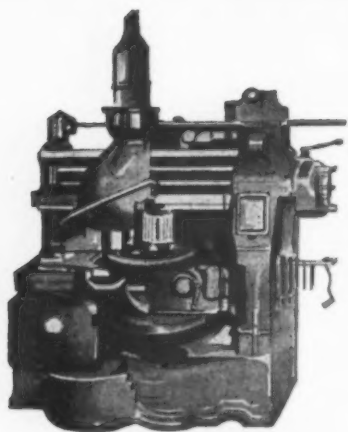
No need to wait for modern production equipment! The tools that won the war can win extra profits for you . . . and do it now! Just look at the hundreds of machine tools shown in this advertisement—all ready for immediate shipment anywhere. For detailed specifications, prices, shipping procedures and location of the equipment simply fill in and mail the coupon at left to your nearest W. A. A. office. Or, if you prefer, call and make arrangements to visit the plants and warehouses where the equipment in which you are interested is stored.

CHECK LIST OF SPECIAL MACHINE TOOL BUYS!

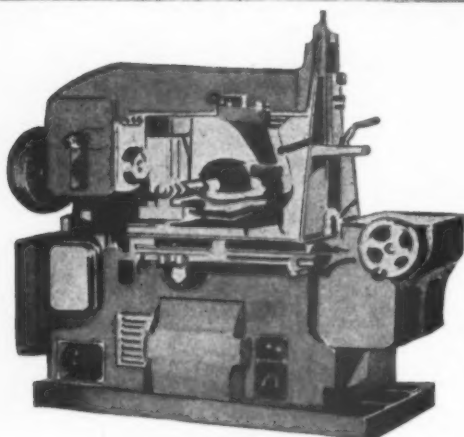
Here are a few of the many hundreds of machine tools available through War Assets Administration.

| KEY | MACHINE | TYPE | SIZE OR CAPACITY | QUANTITY AVAILABLE NOW |
|-----|-----------------------------------|--|---|------------------------|
| 1 | Boring, Drilling & Milling | Horizontal | Under 3" to 6" | 209 |
| 2 | Boring & Turning Mills | Vertical | Under 36" to 120" Swing | 683 |
| 3 | Boring & Turning Fixed Rail Mills | Vertical | | 87 |
| 4 | Precision Boring Machines | Horiz. bridge—single end | Under 8" to 14" | 486 |
| 5 | | Horiz. bridge—double end | Under 8" to 14" | 226 |
| 6 | Drills | Box column—single spindle | Under 1/2" Cap. } Up to 22" Swing } 1/2" to 1" Cap. } 16" to 24" Swing } | 287 |
| 7 | | | | 187 |
| 8 | | Round column—single spindle | Under 1/2" Cap. } Up to 22" Swing } | 738 |
| 9 | | | 1/2" to 1" Cap. } 16" to 24" Swing } | 1163 |
| 10 | | Sensitive Floor & Pedestal Box col. | Under 1/2" Cap. } 12" to 22" Swing } | 933 |
| 11 | | | 1/2" to 1" Cap. } 16" to 24" Swing } | 1875 |
| 12 | | | 1" Cap. and over } 24" Swing and over } | 434 |
| 13 | | Sensitive Floor & Pedestal Round col. | Under 1/2" Cap. } 12" to 22" Swing } | 384 |
| 14 | | | 1/2" to 1" Cap. } Under 16" to 24" Swing } | 1131 |
| 15 | Drills | Sensitive Floor & Pedestal Upright Type—Box Col. | Up to 28" Swing | 549 |
| 16 | | Sensitive Floor & Pedestal Upright Type—Round Col. | Up to 28" Swing | 161 |
| 17 | | Heavy Mfg. Type | Up to 32" Swing | 296 |
| 18 | | Spec. Kingsbury Way & Vertical | | 250 |
| 19 | Multi-Tool | Heavy Duty Mfg. & Production (Not automatic) | Up to 20" Swing | 788 |
| 20 | Lathe | Single Spindle—Horiz. Platten Type | | 63 |
| 21 | | Single Spindle—Horiz. Turret Type | | 280 |
| 22 | | Multi Spindle—Horiz. (4-5-6 & 8 spindle) | | 1518 |
| 23 | | Multi Spindle—Vertical (6 and 8 spindle) | | 202 |
| 24 | Chucking Machine | Auto. Between Centers Horiz. Single Spindle | All sizes | 2036 |
| 25 | Screw Machine | Auto—Bar—Single Spindle | Up to 1 1/2" Cap. | 1975 |
| | | Auto—Bar—5 Spindles | All sizes | 1515 |
| 26 | Screw Machine | Auto—Bar—Eight Spindles | 1 1/2" and Over Cap. | 380 |

| KEY | MACHINE | TYPE | SIZE OR CAPACITY | QUANTITY AVAILABLE NOW |
|-----|--|---|---------------------------|------------------------|
| 27 | Miller | Horiz.—Plain—Hand Feed | 10" and Over Table travel | 564 |
| 28 | | Horiz.—Plain—Knee Type | All sizes | 2125 |
| 29 | | Vertical—Universal Automatic | All sizes | 847 |
| 30 | | Bed Type—Plain—Horiz. Spindle | All sizes | 435 |
| 31 | | Vertical Spindle—Std. | All sizes | 2703 |
| 32 | | Vertical Fixed Bed Profiler (1 & 2 Spindle) | | 428 |
| 33 | | Thread—Universal—Not Automatic | 12" and over Work Diam. | 847 |
| 34 | | Thread—Universal—Auto. | Up to 20" Cap. | 76 |
| 35 | | Thread—Auto.—Chucking | | 238 |
| 36 | | Planetary | 6" to Over 10" Work Diam. | 207 |
| 37 | | Spline | | 206 |
| 38 | | Pantagraph—2 Dimensions | | 248 |
| 39 | Engravers | | | 70 |
| 40 | Honers | Internal—Horizontal | Under 6" Bore | 173 |
| 41 | | Internal—Vertical | | 129 |
| 42 | Lapping | Flatsurface only | 24" Diam. Lap Plate | 187 |
| 43 | Polishers & Buffers | Floor Type | 1/2 to 10 H.P. | 1479 |
| 44 | Lathes | Speed Type | Up to 3 H.P. | 1490 |
| 45 | Saws | Circular Cut-Off | | 250 |
| 46 | Lathes | Cut-Off | Under 1" Bore | 136 |
| 47 | Abrasive Machine | Belt Drum & Disc | | 580 |
| 48 | Abrasive Cut-Off Tapping | | | 112 |
| 49 | | Vertical—1 & 2 Spindle | | 457 |
| 50 | | Horizontal—1 Spindle | | 259 |
| 51 | Die Threading | Bolt Rotary—1 Spindle | | 390 |
| 52 | Centering | Double End—Horizontal | | 112 |
| 53 | Pointing, Chamfering & Burring | | | 141 |
| 54 | Shaver | (Not Gear) | | 104 |
| 55 | Reamer | (Not Rifle) | | 516 |
| 56 | Drawing Machine | | 100,000# and over | 21 |
| 57 | Machinery & Equipment Allied to Primary Metal Forming Mach. & Equip. | Pickling | All sizes | 149 |
| 58 | Straight Side Presses | Vertical—Single action | 5 to 100 Tons | 165 |
| 59 | | Vertical—Double action | 5 to 100 Tons | 111 |
| 60 | Flame Cutting Machine | | | 1631 |
| 61 | Hardness Tester | Brinell—Portable & Power | | 200 |
| 62 | | Rockwell—Manual & Power | | 425 |
| 63 | Inspection Machine | Magnetic (Magnaflux) | | 601 |
| 64 | Balancing Machine | Static | | 93 |
| 65 | | Dynamic | | 67 |



C. Gear Shaper, External and Internal. Two hundred and eighty of these modern machines are available for immediate delivery in Boston, Chicago, Detroit and New York. Sizes above 25" are to be found in Detroit only.



A. Gear Hobber, Horizontal. These machines, available in Chicago, Houston, Detroit and New York, may be obtained in sizes up to 16" capacity for spur and helical gears and pinions and straight splines.

GEAR CUTTING and FINISHING TOOLS

GOVERNMENT-OWNED SURPLUS PRODUCTION EQUIPMENT

All over America urgently needed production is being held up and profits lost for lack of essential parts—many of them gears. In the W. A. A. warehouses, are 2353 highly productive gear cutting and finishing machines of standard make—ready to go to work immediately to produce needed parts. To see them you need only to contact your nearest W. A. A. Regional Office below—or watch your newspapers for special sale announcements in your locality.

SPECIAL BUYS!

| KEY | MACHINE | TYPE | SIZE OR CAPACITY | QUANTITY AVAILABLE NOW |
|-----|---------------------|---|------------------|------------------------|
| A | Gear Hobber | Horizontal | 4" to 16" Cap. | 321 |
| B | | Vertical—Universal | Under 16" Diam. | 89 |
| C | Gear Shapers | External & Internal | Up to 40" Diam. | 280 |
| D | | Spur—External only | | 152 |
| E | | Spur & Helical—Ext. & Int. | Up to 25" Diam. | 275 |
| F | | Spur & Helical—Ext. only | | 139 |
| G | | Bevel Type not incl. Plainer Type Str. Bevel | Up to 36" Diam. | 377 |
| H | Gear Tooth Finisher | Generating Type Grinding | | 140 |
| I | | Formed Wheel Type | | 190 |
| J | Gear Tooth Lapper | External only | | 80 |
| K | | Comb. External & Internal | | 57 |
| L | Gear Tooth Shaver | Rotary Type | | 133 |

FREE INFORMATION:

To War Assets Administration:

Please send me specifications and price information on the items checked below:

A E I
B F J
C G K
D H L

Key Check List: These Key letters correspond to the items listed in the table at the left. Simply check the key letter for the data you want.

Name.....Telephone No.....

Firm.....

Address.....

City.....State.....

WAR ASSETS ADMINISTRATION

OFFICES LISTED BELOW ARE TEMPORARILY IN
RECONSTRUCTION FINANCE CORPORATION AGENCIES

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver • Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia • Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Cincinnati • Fort Worth (Telephone 3-5381)



Under a tenth ... 3,500,000 times!

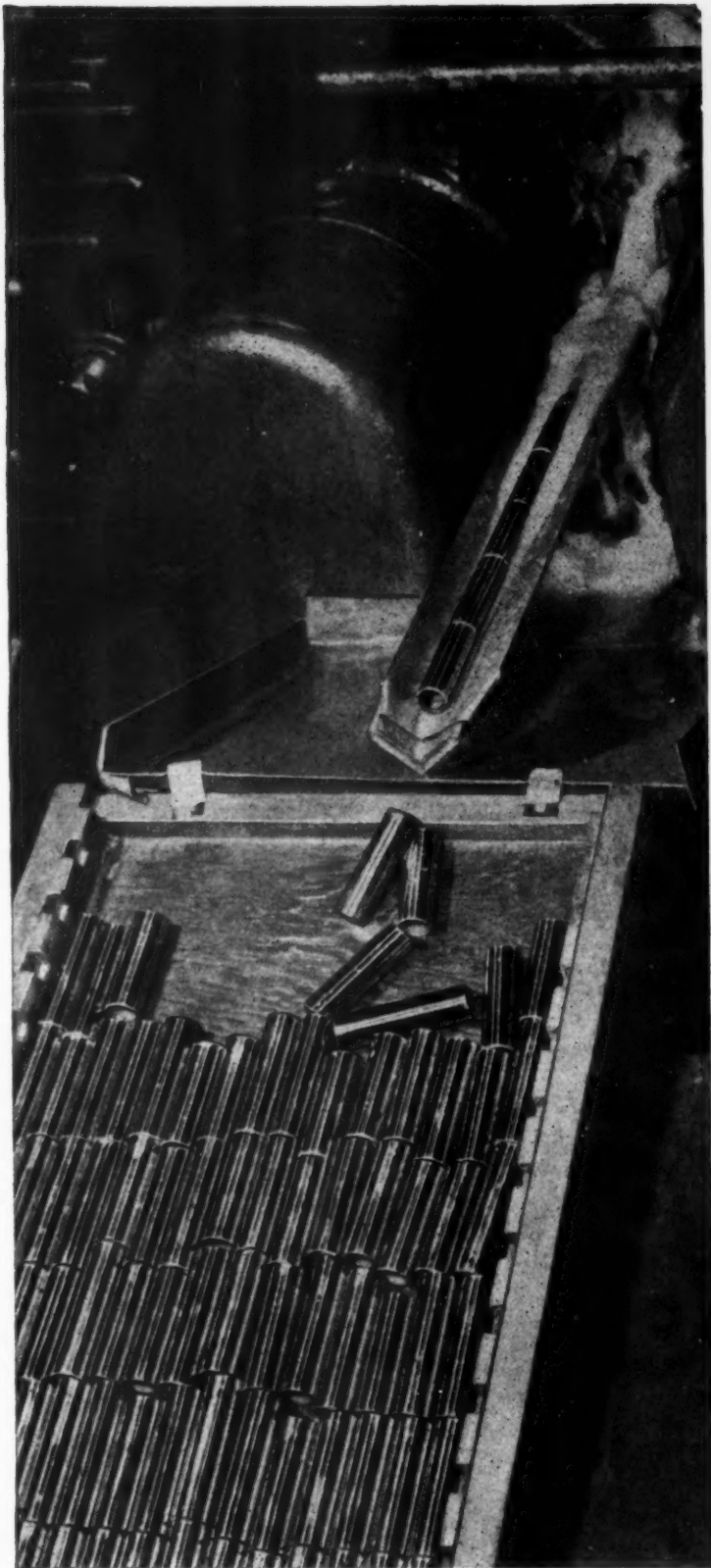
Using Frasse "Shelby" seamless tubing, the Haines Products Co. has produced more than $3\frac{1}{2}$ million piston pins illustrated. These pins are cut off, chamfered, rough ground, slotted, drilled and counter-sunk. After case hardening, each pin is semi-finish and finish ground, and finally lapped.

Millions of pins — sized to a tolerance of under $1/10000$ " — one thirtieth the diameter of a human hair! Starting from a uniform seamless tube, the latter stages of grinding and lapping remove the remaining .004", with each stage gauged electrically. Final finish on each piece is held between 2 and 3 micro inches — a quality story possible only with quality tubing to begin with.

It has been a story of supplier-user cooperation, too. The use of selected fine grain, McQuaid Ehn tested steel...developing a schedule of size specifications to effect maximum economy...the sequence of operations prior to hardening, to insure fine finish—these Frasse suggestions have proved helpful.

For Frasse is a specialist in tubing—and from 50 years of tube warehousing, *knows* tubing. Frasse stocks of mechanical tubing alone range from $3/32$ " all the way up to $10\frac{1}{2}$ " O. D.—not to mention the alloy tubing, condenser tubing, or stainless.

For steel tubing — and qualified engineering service in its applications...call upon Frasse. Peter A. Frasse and Co., Inc., 17 Grand Street, New York 13, N. Y. (Walker 5-2200), 3911 Wissabickon Ave., Philadelphia 29, Pa. (Radcliff 5-7100), 50 Exchange St., Buffalo 3, N. Y. (Washington 2000) • Jersey City • Syracuse • Hartford • Rochester • Baltimore.



FRASSE

for tubing

CARBON
ALLOY
STAINLESS



Distributor of "Shelby" Seamless Mechanical Tubing



SAFETEX GUMMED TAPE

Does a better job!

IT'S STRONGER

Because it is made from northern kraft... the longer, stronger fibres of northern grown woods, produce a paper noted for its toughness and strength.

Only the best of this stock... made especially for gumming purposes and meeting rigid requirements for constant uniformity, color, finish and formation is used in SAFETEX TAPE.

Look For This **PULL TAB OPENER**
In Every Roll
Saves Time
& Money





YOU CAN SHIP SAFELY WITH **SAFETEX** — "WRITE FOR NEAREST PAPER MERCHANT DISTRIBUTOR"


CENTRAL PAPER CO., MENASHA, WISCONSIN

For accuracy and uniformity in
springs & screw machine products

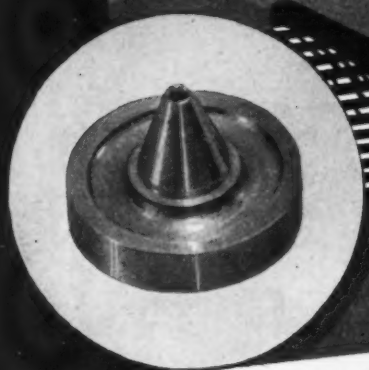
WRITE THIS NAME
into your
specifications

THE PECK SPRING CO., 40 WELLS STREET, PLAINVILLE, CONN.



PRECISION MADE SCREW MACHINE PRODUCTS



It matters little whether the order calls for a large or a small quantity. Every job receives the same, careful attention. Perhaps our engineers can suggest a more economical method of making your parts. At any rate, we'll be glad to help. Call or write—Department A.

U.S. AUTOMATIC CORPORATION
Screw Machine Products
CHICAGO
AMHERST, OHIO
DETROIT
NEW YORK



Bar Stock Capacity 3/64" to 5 1/2"
Heat-Treating • Grinding • Plating

**BURCOTT HAS
COTTON DUCKS**

Burcott Mills regularly supplies cotton ducks for the following industries: Machinery, Automotive, Petroleum, Rubber, Agricultural, Food, Paint, Electronic, Plastics, and many others.

Just a few of the items for quick delivery from Chicago stock:

| | |
|----------------|-----------------|
| 37" No. 6 Duck | 37" No. 8 Duck |
| 42" No. 6 Duck | 108" No. 8 Duck |
| 48" No. 6 Duck | 26" No. 10 Duck |
| 72" No. 6 Duck | 30" No. 10 Duck |
| 84" No. 6 Duck | 37" No. 10 Duck |

36" 14.90 oz. Green Treated Duck
72" No. 8 Olive Drab Water-proof, Flame-proof Duck

One of America's Most **DEPENDABLE** Industrial Textile Sources

Subject to prior sale.
WRITE, WIRE OR PHONE.

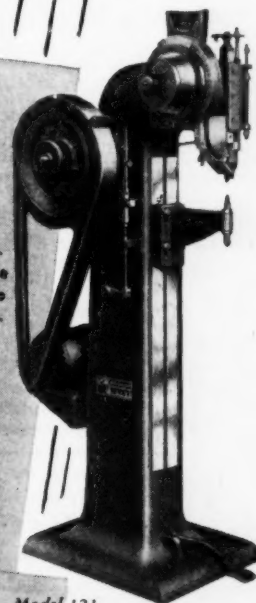
BURCOTT MILLS
305 N. DESPLAINES ST. CHICAGO 6, ILL.

For ECONOMICAL FASTENING CALL *Chicago Rivet!*

Riveting with Chicago Automatic Rivet-Setters is a fast, inexpensive way to fasten metal to metal, wood to wood, leather to leather, fabric to fabric, plastic to plastic, or any combination of these. Chicago Rivet engineers have the experience of 26 years to help you with your hard fastening problems.

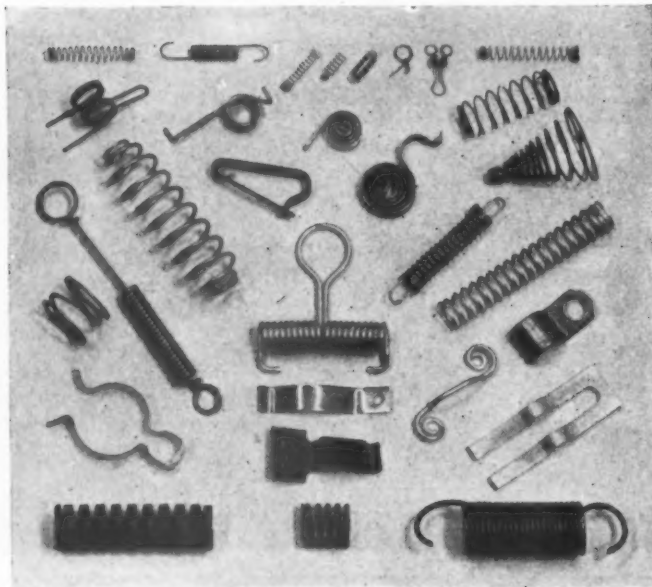
Free FASTENING CLINIC

Send us a drawing or unfastened sample or sub-assembly of your product. We will gladly analyze your fastening needs, recommend the type of rivet and Chicago Automatic Rivet-Setter to do the job best, and submit estimated production rates. No obligation.



Model 121
Chicago Automatic Rivet-Setter

CHICAGO RIVET & MACHINE CO.
9607 W. Jackson Blvd., Bellwood, Ill. (Chicago Suburb)
Automatic Rivet-Setters • Tubular and Split Rivets in all Rivet Metals



No product is better than its springs—and the operation of your product can be vitally affected by one small spring, hidden from sight.

Whatever the purpose of a spring—top efficiency can be engineered into it only by experts in spring design. Reliable is experienced in accurately suiting the spring to the job. We are used to tight tolerances, and to keeping every variable under absolute production control. The making of many millions of springs, for every conceivable function, has given Reliable engineers a razor-sharp conception of the best way to create and produce a spring for a given job.

When it comes to springs, let Reliable help in planning your product, and in furnishing uniformly better springs, stampings, and wire forms. May we see your specifications?

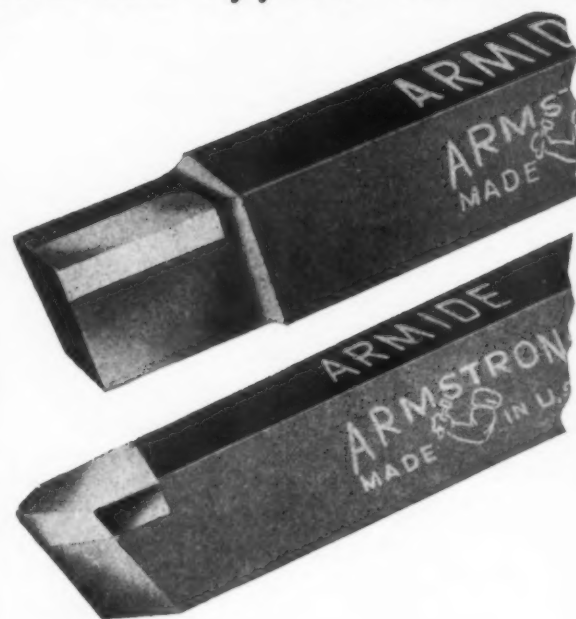
• We can give very good delivery right now on compression, extension, or torsion springs of .020 to .062 wire.

Ask for Reliable Spring Catalog

THE RELIABLE SPRING & WIRE FORMS CO.
3167 Fulton Road Cleveland 9, Ohio
Representatives in Principal Cities

YOU CAN RELY ON **Reliable Springs**
ROUND AND FLAT WIRE SPRINGS CUPS HOOKS BENDS
LIGHT STAMPINGS

ARMSTRONG ARMIDE Carbide Tipped Cutters



ARMIDE is a sintered-carbide cutting material which approaches the diamond in hardness. ARMIDE will machine the hardest and toughest steels and sand-filled castings with ease, as well as such heretofore "un-machineable" substances as hard rubber, plastics, and even glass. Because of the extreme hardness of ARMIDE, cutter bits tipped with this material will hold their cutting edge much longer than the finest tool steels and will machine from 10 to 100 times as many pieces between grindings.

ARMIDE-tipped CUTTERS offer special advantages on machining operations involving: (1) Long runs, (2) Sand-filled castings, (3) Tough alloy steels, (4) Machining of hardened parts without annealing and subsequent re-hardening, as in maintenance work, (5) High Speed Machining, (6) Machining of unusual materials.

ARMIDE Carbide Tipped Cutters are designed for use in ARMSTRONG Carbide TOOL HOLDERS. They come in two grades ARMIDE (Red) for machining steel, and ARMIDE (Grey) for machining cast iron, brass, bronze, aluminum and non-metallics. These grades of ARMIDE are distinguished by the corresponding color of the cutter-bit shank.

Both ARMIDE (Red) and ARMIDE (Grey) Cutter-Bits come ready-ground in four standard cutter shapes (illustrated below) namely: Right-Hand Turning, Left-Hand Turning, Square Nose Finishing 80° and Round point "V". Both ARMIDE (Red) and ARMIDE (Grey) cutter-bits come with either "Square" or "Heavy Duty" shanks. The shanks of "Square" cutters have a square cross section. The shanks of "Heavy Duty" cutters are deeper than they are wide in cross section, the added depth compensating for that part of the shank cut away to receive the ARMIDE tip.



ARMSTRONG BROS. TOOL CO.

"The Tool Holder People" 303 N. Francisco Ave., Chicago, U.S.A.
Eastern Warehouse & Sales: 199 Lafayette St., New York

**NOTHING PROTECTS
LIKE**

STEEL

for **CONTAINER PROTECTION**

in **packing goods**

for **greater security in shipping**

there is a Signode application that assures the greatest possible security.

Let a Signode engineer help you simplify your packaging and shipping. Write today.

SIGNODE STEEL STRAPPING COMPANY

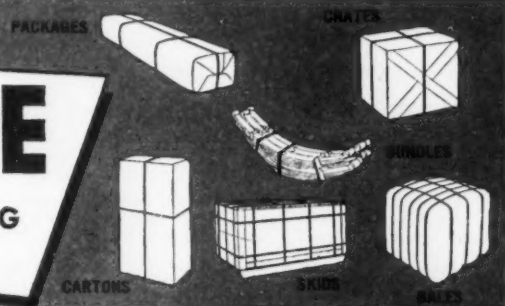
2602 N. Western Avenue, Chicago 47, Illinois

371 Furman St., Brooklyn 2, N. Y.

454 Bryant St., San Francisco 7, Calif.

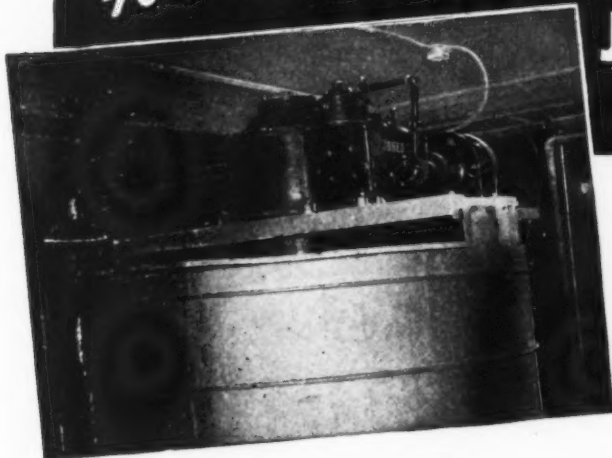
Branches in 21 Principal Cities

SIGNODE
STEEL STRAPPING



For driving agitators, mixers and similar equipment—

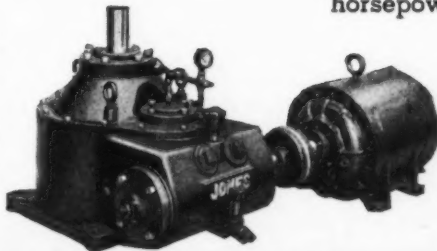
JONES WORM-HELICAL SPEED REDUCERS



HERE is a line of machines that fills a long felt need for double reduction units of the fully enclosed type to be used for agitators, mixers, etc. requiring a vertical shaft drive.

Many of these Jones units have established excellent performance records in a wide variety of service. As a result of that experience a complete standard line has been developed covering 15 standard ratios ranging from 40 to 1 to 250 to 1 for all common motor speeds and a wide range of horsepower ratings.

• This Jones Worm-Helical Speed Reducer on a lacquer agitator is typical of the wide range of services for which these drives can be used such as ore roasters, pulp tank mixers, furnaces, bending rolls and similar applications.



The new Jones Bulletin No. 75 covers complete details on these new Worm-Helical Speed Reducers, with rating tables, dimension diagrams, torque charts and other application information. We shall be pleased to send you a copy.



W. A. JONES FOUNDRY & MACHINE CO.

4453 Roosevelt Road, Chicago, Illinois

Jones

HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS • PULLEYS
CUT AND MOLDED TOOTH GEARS • V-BELT SHEAVES • ANTI-FRICTION
PILLOW BLOCKS • FRICTION CLUTCHES • TRANSMISSION APPLIANCES

Tablet and Extruded CATALYSTS



Choose from a complete line of PREFORMED CATALYSTS

Harshaw prepares many metals, oxides, and inorganic salts in powdered, tableted, and extruded form for use as catalysts in the petroleum, organic chemical, and pharmaceutical industries.

A complete line of these preformed catalysts is available for alkylation . . . oxidation . . . isomerization . . . dehydrogenation . . . hydroforming . . . hydrogenation . . . polymerization . . . dehydration . . . desulfurization . . . and various organic processes.

The wide range of industrial applications served by this complete line, indicates a diversified catalyst experience by which you benefit when ordering from Harshaw. May we discuss your catalyst requirements with you?

CATALYSTS Available in Preformed Shapes

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|-------------------|-------------------|
| Activated Alumina | Molybdena Alumina |
| Chrome Alumina | Tungsten Alumina |
| Chrome | Nickel |
| Cobalt | Phosphates |
| Iron | Thorium |
| Magnesia | Titanium |
| Molybdenum | Tungsten |

We are Exclusive Sales Agents for
DIAMOND-HARSHAW
Preformed Catalysts



OTHER TYPICAL CATALYSTS



Anhydrous Hydrofluoric Acid • Aluminum Chloride
Boron Trifluoride • Anhydrous Hydrochloric Acid

THE HARSHAW CHEMICAL CO.

1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

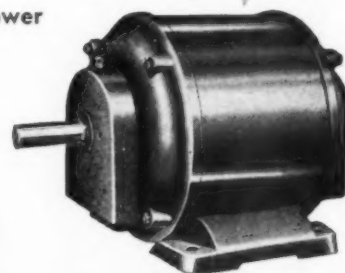
Saran PLASTIC PIPE AND TUBING
"By Commercial"

for thousands of industrial applications where a tough, strong and durable piping system is desired. Saran pipe is light in weight, attractive in appearance, and resistant to most acids and chemicals. Consult our Engineering Department on your application, or write for our new Catalog EP—just off the press.

COMMERCIAL PLASTICS CO.
201 No. WELLS ST. CHICAGO 6, ILL.

Before you specify ANY MOTOR, check these **VALLEY** ADVANTAGES

- ✓ Wide Adaptability—sizes ½ to 75 h. p.
- ✓ More Flexibility in power planning.
- ✓ Takes Unusual Power Loads
- ✓ Drip-Proof . . . Splash-Proof
- ✓ Economical Operation
- ✓ Cool
- ✓ BALL BEARING



VALLEY
ELECTRIC CORPORATION
4221 Forest Park Blvd. • St. Louis 8, Mo.

PAPER THAT *Stops* FLAME

FREE BOOK

Write for
"Industrial
Paper Book"



REG. U.S.
PAT. OFF.

It refuses to burn! It will char, but that's all — no flame or smolder.

Flame resistance is now a *must* in product application — for Building Insulation — Displays — Fire Protection for your products.

Flame Resistant paper — another example of Central's out-of-the-ordinary paper treatments for industrial use in processes and products.

Write for a Free Sample of Central Flame Proof Paper — a real step to safety.

CENTRAL PAPER COMPANY INC.
2446 Lakeshore Drive • Muskegon, Mich.

OFFICES IN: BOSTON, NEW YORK, BALTIMORE, ROCHESTER, CLEVELAND
CINCINNATI, DETROIT, CHICAGO, ST. LOUIS, SAN FRANCISCO

STROM BALLS

For The Bearings Of Industry



Balls being ejected from normalizing furnaces during process of heat treating.

Industry continually seeks to perfect the performance of its products. That means that all parts must be brought up to higher and higher standards. It is especially important that the balls on which the bearings of industry run shall be of the highest standard of perfection. Strom Balls, in their unbelievably high qualities of finish, sphericity and precision—developed through exclusive concentration on making fine balls for 25 years—hold first place in American industry. Strom Steel Ball Co., 1850 So. 54th Ave., Cicero 50, Ill.

Strom BALLS  **Serve Industry**

Largest Independent and Exclusive Metal Ball Manufacturer



Oily rags and similar flammable waste constitute one of the worst fire hazards ... they cause millions of dollars in property losses annually, because too often they're not kept in proper containers.

PROTECT YOUR PLANT THE **JUSTRITE** WAY!



Use the Justrite Oily Waste Can, the container that is safety-approved for oily waste and other dangerously flammable material by Underwriters' Laboratories, Inc., and the Associated Factory Mutual Fire Insurance Companies. Justrite Oily Waste Cans are sturdily made of 24-gauge galvanized steel, double seamed and soldered. Legs and handle made of 1/8" band iron. Top closes automatically. Available in two types—with or without foot lever. In model with foot lever both hands are left free—a great convenience.

Justrite Oily Waste Cans come in a wide range of sizes. In plants and shops all over the country they're rated as standard equipment. Use the "Justrite" way to protect your plant and get fire protection at a minimum cost!

*Ask your supplier about Justrite Safety Products
or write for prices and complete specifications*

JUSTRITE MANUFACTURING COMPANY
2063 N. Southport Ave., Dept. B-1, Chicago 14, Ill.

JUSTRITE *Safety*

SAFETY CANS • OILY WASTE CANS
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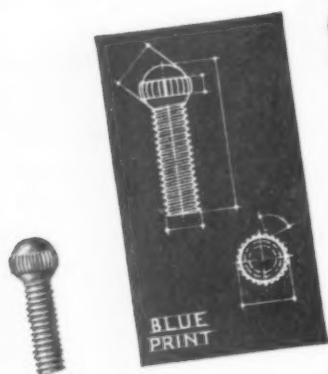
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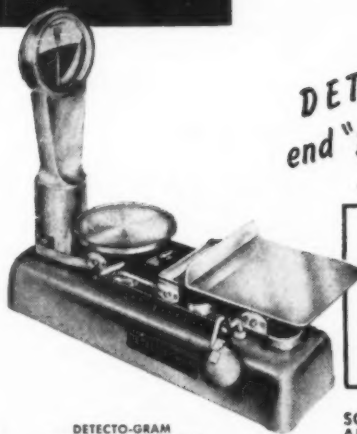
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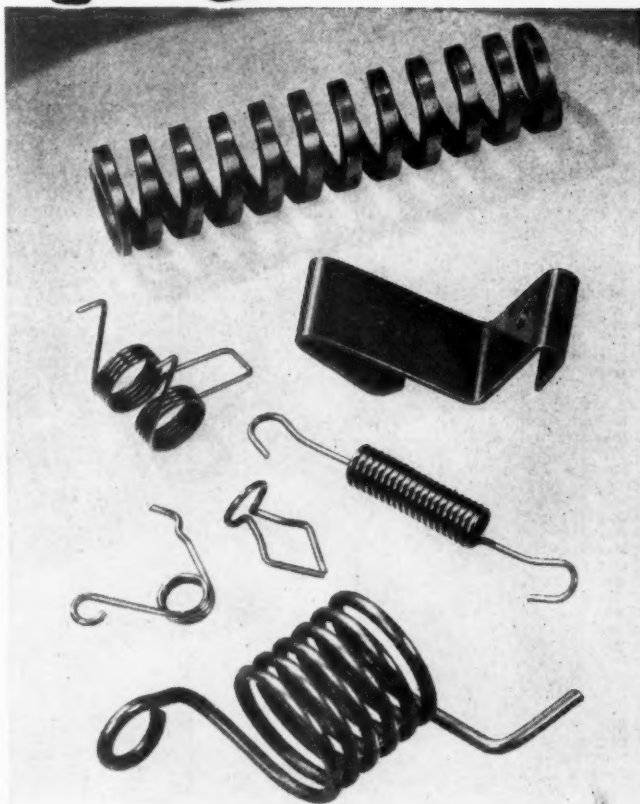
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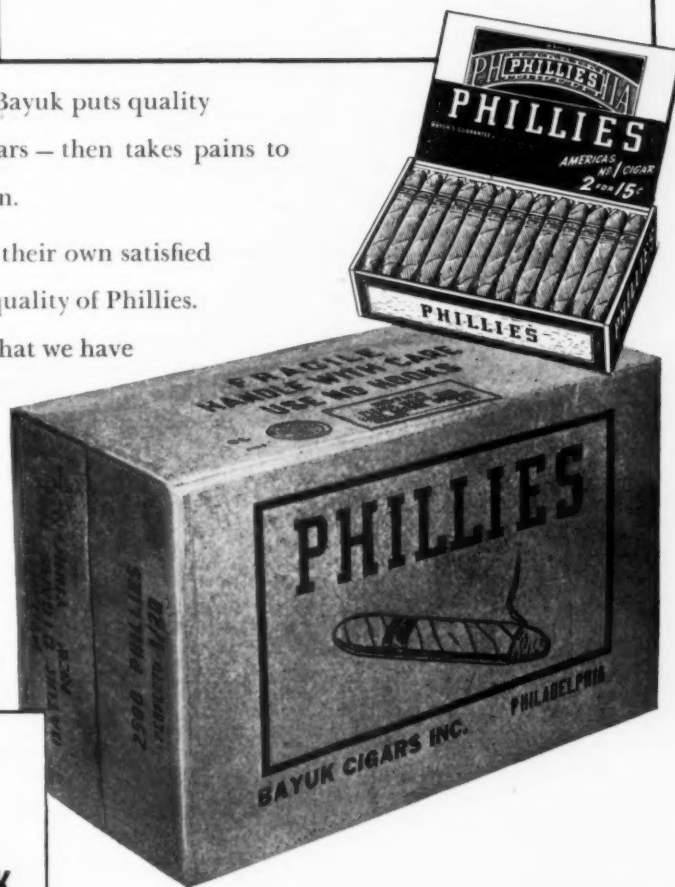
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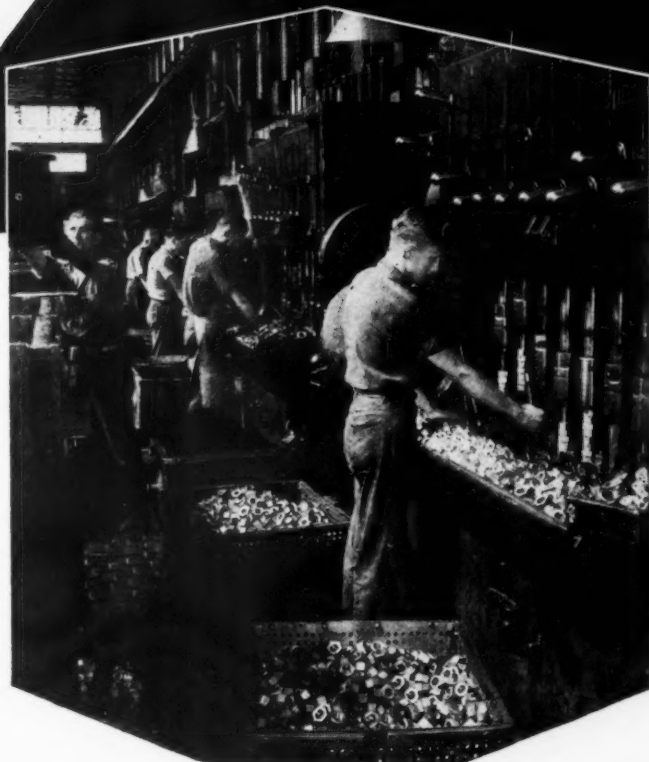
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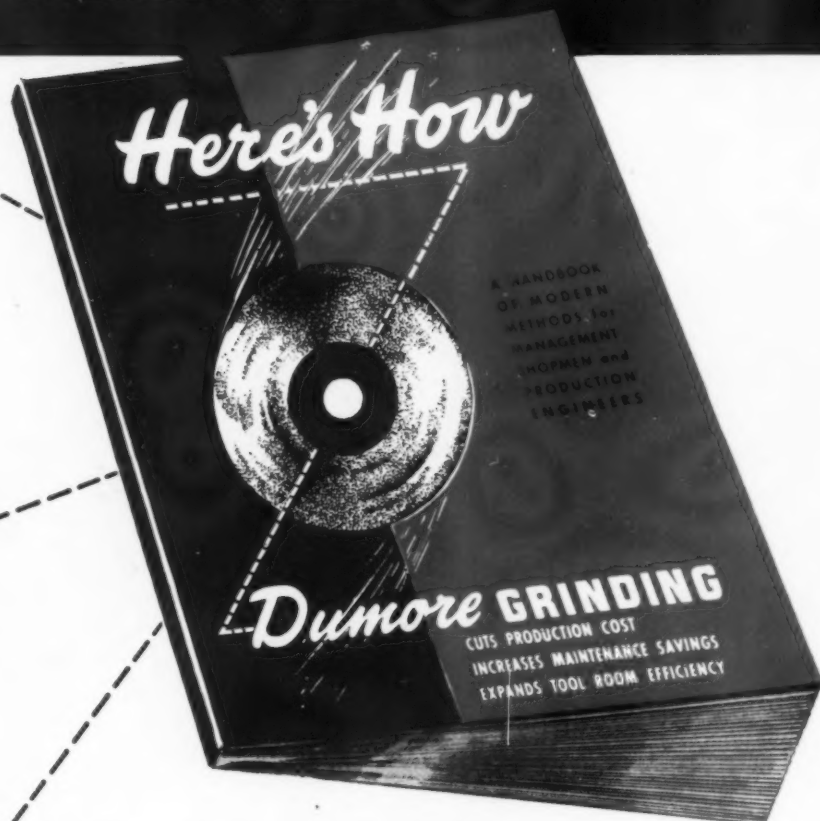
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6. DESCRIPTION of the complete Dumore line of Precision and Hand Grinders, Pages 6 to 9 and 66-69.
7. CROSS INDEX by: Operations. Set-ups. Special Purpose Machines. Special Fixtures. Wet Grinding Operations. Materials. Indicating Devices. Protective Devices. Dressing Arrangements.



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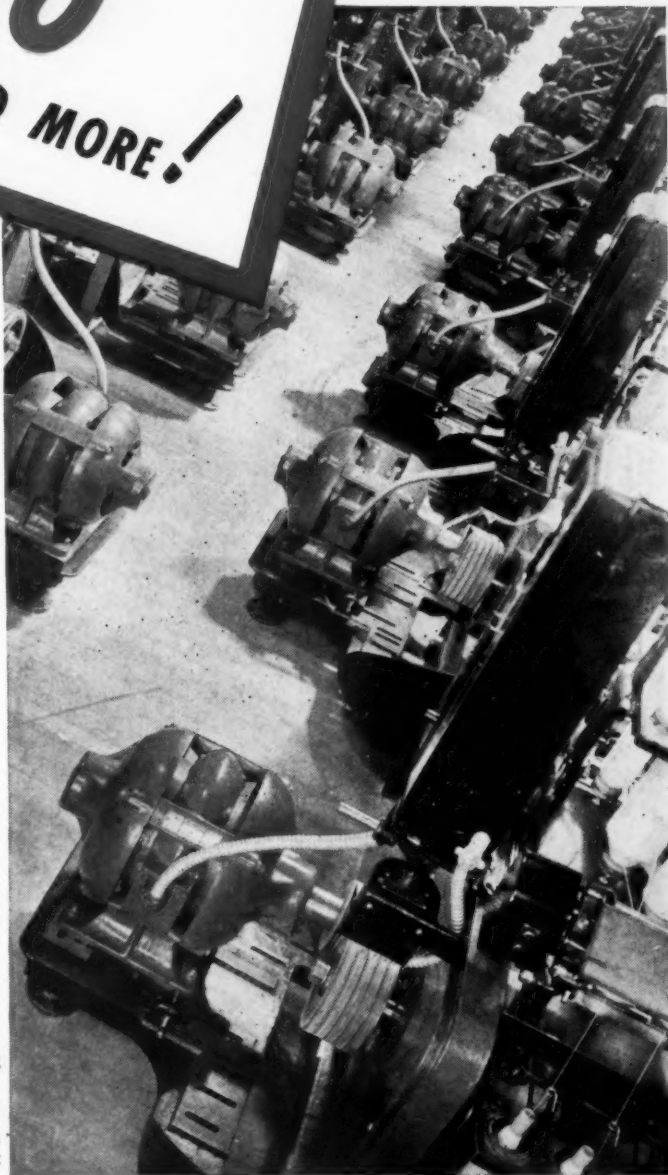
These motors have been on regular 24-hour-a-day production in textile mills with prelubricated sealed ball bearings since 1938. They proved their point—that the lubrication of motors can be eliminated for 5 years, or more, at a time.

They led to the offering by Westinghouse of squirrel-cage motors in Types CSP and CS up to 20 hp (Frames 203 to 326, inclusive) with the same type bearings. Using these motors, the engineers who design equipment or lay out plants can now place the drives most advantageously for their operation—unhampered by questions of accessibility and ease of greasing. For further details, write for Bulletin B-3554 and Descriptive Bulletins 3100-CSP and 3100-CS-1, to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

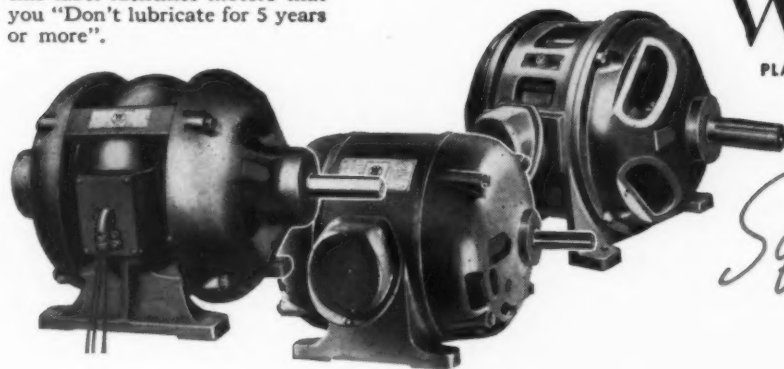
J-21378

| PRELUBRICATED | | |
|-------------------------------|-------------------|--|
| INSPECT BEARING AFTER 5 YEARS | | |
| MOTOR TYPE | SEE INST. LEAFLET | |
| CSP-CVP-CIP | 3100-CSP-1 | |
| CIP | 3000-CIP-1 | |
| CVP-CSP-CVP | 3000-CVP-1 | |

(Right) In 24-hour-a-day operation in the high ambient temperatures of southern textile mills, prelubricated sealed ball bearings have run much longer than 5 years without greasing.



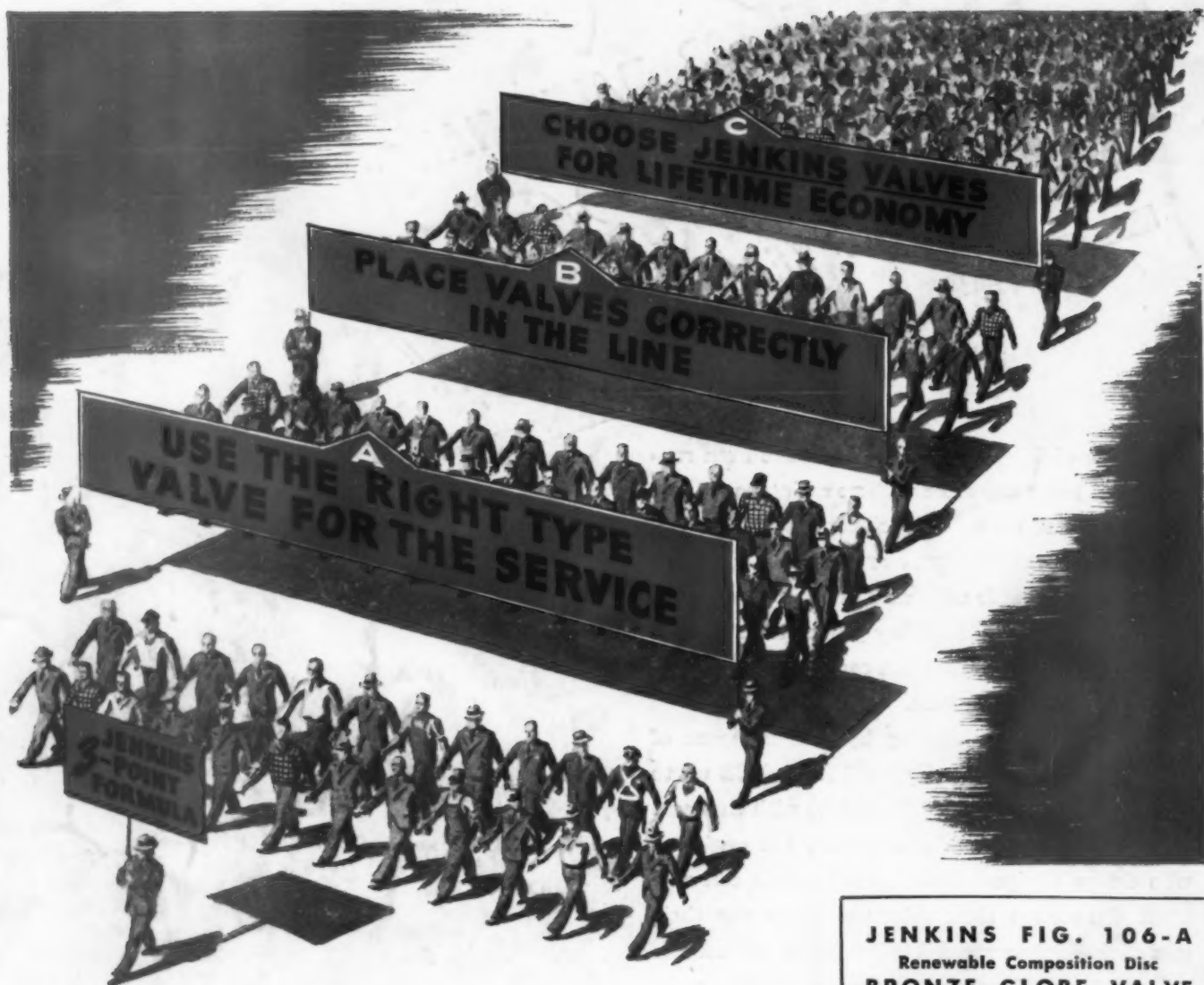
Another Westinghouse "first"—this label identifies motors that you "Don't lubricate for 5 years or more".



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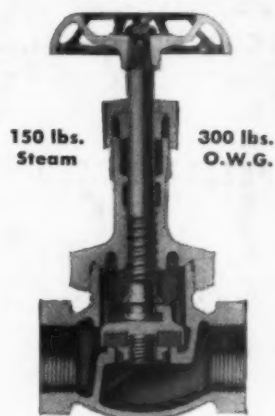
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JENKINS FIG. 106-A
Renewable Composition Disc
BRONZE GLOBE VALVE



A renewal composition disc valve. Fig. 106-A features a convenient slip-on stay-on disc holder that permits a quick change of disc. The resilient Jenkins composition disc assures drop tight closure with least closing effort. The bevel joint between the body and bonnet serves as an internal brace and resists the crushing effect of the body assembly.

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